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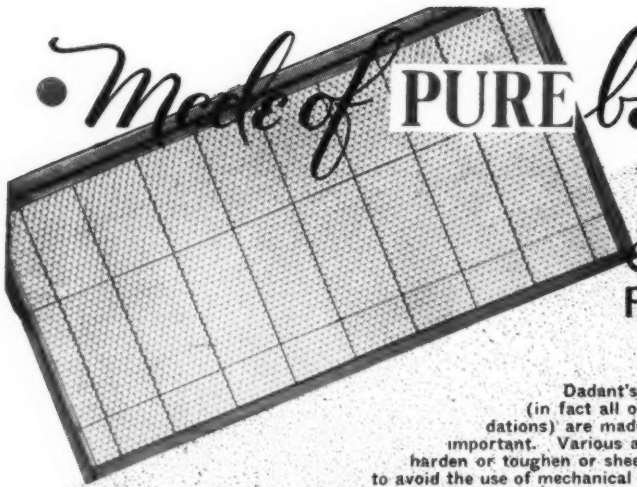
• Made of PURE beeswax



DADANT'S CRIMP-WIRED FOUNDATION

Dadant's Crimp-wired Foundation (in fact all of Dadant's Bee Comb Foundations) are made of pure beeswax. This is important. Various attempts have been made to harden or toughen or sheer up pure beeswax in order to avoid the use of mechanical supports such as are used in Dadant's Crimp-wired Foundation. However, remember beeswax is a basic raw material which goes into many products and has many uses.

Industry demands purity and refuses known mixtures. Remember, too, that the beeswax in comb honey whether in section or in bulk is actually a food because it is a part of the honey. Therefore, any mixing of other waxes with it is absolutely an adulteration.

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Wires of special steel for greatest support

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Brilliant, natural color

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Cell walls a guide to perfect comb

Milled to exact measures

All cells just alike

Every sheet the same

Carefully and rigidly inspected

Securely and safely wrapped

Gives You LIFETIME COMBS

FIG. 1—Pure Beeswax: fleecy flakes, thin bars

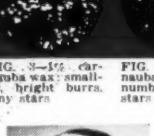
FIG. 2—½% carnauba wax: large, clear, bright burrs

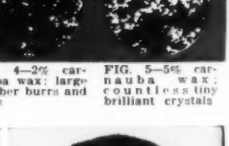
FIG. 3—1½% carnauba wax: smaller, bright burrs, tiny stars

FIG. 4—2% carnauba wax: large number burrs and stars

FIG. 5—5% carnauba wax: countless tiny brilliant crystals

COMPARATIVE MICROPHOTOS of Pure Beeswax and four stages of wax adulteration.





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Chas. S. Engle, Beeville, Texas.

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		Queenline	Economy
2-lb. jar - case	12	$ .82	$ .76
1-lb. jar - case	24	1.35	1.00
½-lb. jar - case	24	1.00	.92
5-lb. jar - case	6	$ .69	
2½-lb. sq. jar - case	6	1.18	

TIN

5-lb. tin pail case	50	$ 6.35
5-lb. tin pail case	100	12.00
10-lb. tin pail case	50	9.00
60-lb. tin can 2½" screw top, bulk 62c		
case	16	$10.97
case	24	14.80

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Monthly HONEY Report

United States Market

The following figures represent an expression of current prices from beekeepers and honey packers over the country. They are based on several reports from each state averaged with the reports in the region. Where insufficient information is returned, prices have been omitted from the chart. Where three figures appear on the chart the first figure represents the low, the middle figure represents the average, and the third figure the high price in cents per pound. Where only two figures are used the low and high are shown.

	North & South Atlantic	South Central	North Central	Midwest	West
Bulk Honey:					
Table Grade	11-12½-15c		11-12-16c	12-12½-13c	11-11½-12c
Baking Grade	9½-10½-15		9-10-11	10	9½-10-14
Price to Grocers:					
5 lb. jar - can	18-20-24	16-20-25	18-19-21		17-18-20
2 lb. jar - 12's	20-23-28	24-27-30	20-22-26		21-24-25
1 lb. jar - 24's	20-24-30	25-26-30	21-23-26		21-25-26
Comb Honey: Cs. of 24 Sec.	$7.40-9-10.80		$8.40-8.75	$7.90	
Retail Price:					
60 lb. can	16-18-20	20 21	16-17-22	15 20	15-16-20
5 lb. jar	20-23-30	20 30	20-23-25		20-23-25
2 lb. jar	25-32-37		27-30-32	25-31-33	25-27-32½
1 lb. jar	28-35-40	35 40	28-33-35	30-33-35	30-32-35
Honey Sales:	Fair	Fair	Fair	Slow	Fair
Estimated Crop: Conditions based on normal %	65%	80%	60%	60%	75%

"Prospects for wildflower honey and winter stores are good."—S. E. Arizona.
"Fair flow from second cutting of alfalfa".—Colorado.
"Continued dry weather has seriously affected our honey plants."—Alabama.
"Need rain for fall crop".—Arkansas.
"Crop is spotted."—Ohio; Indiana.
"Crop better than a year ago. August will decide crop."—Wisconsin.
"Champlain Valley had its first good crop in eight years."—Vermont.
"Recent rains will help fall flowers."—Pa.
"Orange: 11½c; Gallberry 10c; all Amber 9½c."—Florida.

Canadian Market

(Unless otherwise specified, all quotations are for cases of No. 1 white.)

HALIFAX: Mkt. steady.
N.B., Ont., past., paper,
24/2's $12.50
24/1's 6.50

SAINT JOHN: Mkt. steady.
Ont., past., glass,
24/16-oz. ..... $ 7.25
paper,
24/1's 6.10
24/2's 11.10

MONTREAL: Mkt. firm.
Que., White, metal,
24/2's $10.75-11.50
12/4's 10.50-11.00
glass,
24/8-oz. 4.25- 4.50
24/16-oz. .. 6.25- 6.75
Dark, metal,
24/2's 6.50- 6.75

OTTAWA: Mkt. steady.
Ont., past., paper,
24/1's ..... $ 5.75- 5.80
metal,
24/2's 11.40-11.90
12/4's 11.65-11.70
Golden metal,
12/4's 8.10- 9.75
Amber, metal,
12/4's 8.50- 9.75
Man., White, metal,
12/4's 11.75

TORONTO: Mkt. steady.
Ont., past., paper,
24/2's $10.25-11.00
glass,
24/16-oz. 6.25- 6.50
Amber, paper,
24/2's 7.00- 7.50
Dark, metal,
24/2's 7.00- 7.50

WINNIPEG: Mkt. steady.
Man., metal,
24/2's ..... $ 9.80
12/4's 9.30
past., paper,
48/1's 11.35
24/2's 10.50

REGINA: Mkt. steady.
Sask., metal,
12/4's ..... $ 9.85-10.00
past., paper,
48/1's 11.55-12.00
metal,
24/2's 11.20-11.35
12/4's 11.00-11.05
6/8's 10.85-10.95

SASKATOON: Mkt. steady.
Sask., metal,
12/4's ..... $ 9.50- 9.75
past., paper,
48/1's 11.40-11.50
metal,
24/2's 11.20-11.30
12/4's 10.85-11.00

EDMONTON: Mkt. steady.
Alta., metal,
12/4's ..... $ 9.00- 9.60
past., paper,
48/1's 10.85-11.30
metal,
24/2's 9.52-11.00
liquid, glass,
12/12-oz 2.93- 3.35

CALGARY: Mkt. steady.
Alta., metal,
12/4's $10.40
6/8's 10.40
past., paper,
48/1's 11.00-11.25
24/2's 10.50-10.75
metal,
12/4's 10.45

VANCOUVER: Mkt. steady.
Alta., past., carton,
48/1's $12.00
24/2's 11.60
metal,
24/2's 12.00
12/4's 11.60
liquid, past., glass,
12/12-oz. 4.60

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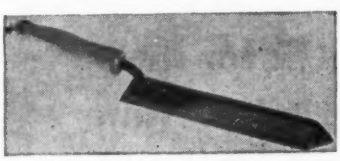

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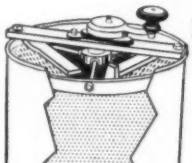

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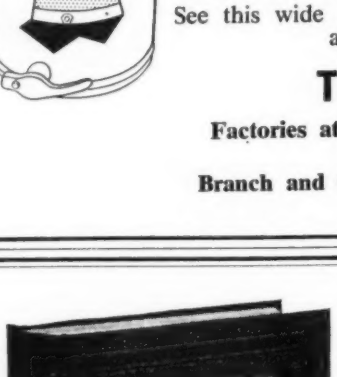

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Equipment for processing honey for the small beekeeper

by E. J. ANDERSON, Pa. State University, State College, Pa.

HONEY IS RIPENED by the bees at a temperature of approximately 95 degrees F., and at this temperature the honey normally becomes a saturated sugar solution. When honey is stored at lower temperatures, the dextrose forms crystals and the result is crystallized honey. In this form, honey is not very palatable unless the crystals are very fine.

The buying public demands liquid honey in glass or tin containers, which means that most honey must be heated either to keep it liquid or to liquefy it after it has crystallized. Honey may be liquefied by submerging the containers in hot water, but this means that the tin will be damaged or if labels are on the containers the labels will be destroyed. The dry heating chamber, therefore, is the most satisfactory device used for heating and liquefying the honey.

Heating honey liquefies it, but excessive or prolonged heating breaks down the proteins and colloids which then impart to honey a characteristic and undesirable burnt flavor.

Most equipment now in use heats honey in large quantities. Tanks ranging in capacity from 100 pounds to many tons are used. Since honey resists the penetration of heat, prolonged heating is required before all the honey in a tank is brought to the desired temperature. Temperatures as low as 160 degrees F. bring about measurable changes in honey of light color when this temperature is maintained for as long as 15 minutes.

Dark honey, such as buckwheat, is more easily damaged than light honey. Dark honey contains more colloids, proteins, and flavoring material which largely make up the unstable part of honey. Temperatures as low as 130 degrees F. may damage buckwheat honey.

Equipment for Heating Honey

A dry chamber may be heated with electric heating units or with a radiator using steam or hot water. If a radiator is used coal, oil, or gas may be used as the source of heat. In some localities any one of these fuels may be a cheaper source of heat than electricity. They vary in cost depending upon the presence or absence of a natural supply near at hand.

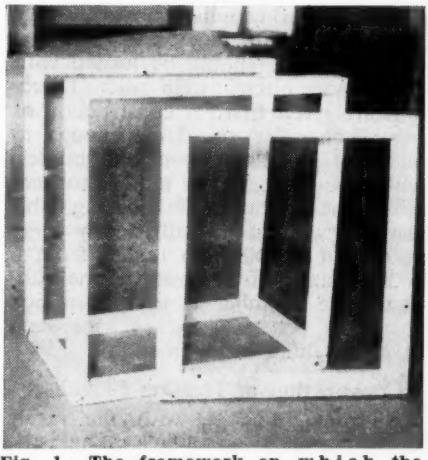


Fig. 1.—The framework on which the chamber is built. (Two cross strips are missing.)

The convenience of electricity, however, is unequalled by any other source of heat. It can be accurately controlled with a thermostat and can be left to do its work while the beekeeper is working elsewhere. For these reasons, specific directions will be given for building a heating chamber in which an electric strip heating unit is used as a source of heat. If some source of heat other than electricity is used, it is a simple matter to substitute a radiator or series of hot water or steam pipes for the electric unit. The hot water and steam pipes do not present a fire hazard.

The size of the chamber will depend upon the volume of honey to be heated at any one time. A small beekeeper may build a chamber large enough to

heat but two cans at a time while a large bottler may wish to heat tons at one filling.

The Dry Heating Chamber

The heating chamber to be described here can be used to liquefy crystallized honey in bottles, pails, or 60-pound cans. It can be used also to render beeswax from cappings or to liquefy crystallized comb honey.

The chamber should be heated with one or more electric strip units. Directions are given first for construction of a small chamber, one large enough to hold 150 pounds of honey in bottles, two 60-pound cans, or a tank to heat 120 pounds of honey for bottling. This chamber will take a sufficiently large amount of cappings to render from 6 to 12 pounds of beeswax at one running. The chamber is a wooden box 22 inches deep, 24 inches wide, and 40 inches high **inside** measure.

Construction of Heating Chamber

A frame, Fig. 1, with the inside measurement given above should be made from 1⅛ by 1⅛ inch clear white pine or 2 x 4's. Be sure the corners are square; when fastening them together and when the sheet metal is nailed to the frame, nail a sheet of galvanized iron on the rear wall and the top of the chamber. Add a two-inch strip of wood to each side and top of the frame next to the sheet iron to provide a place to nail the supports that go inside to hold the shelves and other equipment in place.

Insulate Properly

TO INSULATE the rear wall, provide two air spaces between the heating unit and the galvanized iron rear wall. This is done by attaching the heating units to a second sheet of galvanized iron with bolts. A piece of one-half-inch diameter iron pipe three-quarter-inch long is placed on each bolt between the heating unit and the sheet metal. The edges of the sheet metal are bent on the two sides so that it is raised three-quarter-inch from the rear wall when attached to the wall. This sheet of metal is six inches wider than the length of the units and about 16 inches long. Since it is three-quarters inch from the rear wall and open at top and bottom, air circulates between the sheets of metal and carries the heat into the chamber. At least four inches of space is left between this sheet and the top and bottom of the chamber. The two heating units each of 500-watt capacity are the size fastened to the sheet metal.

CAUTION: It is important that air spaces be provided to prevent a fire hazard. If units with total heating capacities greater than 1000 watts are used, there should be three air spaces between the units and the wall. They should be made in the same way with the top and bottom open to provide a free circulation of air. Never attach a heating unit to the top of the chamber.

A third piece of metal should be placed one inch inside the heating unit so as to prevent direct heat from striking the honey containers. This sheet of metal should be 27 inches wide by 28 inches long. It should be fastened to the frame in the rear of the chamber so as to leave an open space of six inches above and below to provide a free circulation of air over the heating unit.

This sheet of metal is insulated opposite the electric connections of the heating unit. It is insulated to prevent a contact with the metal in case it is bumped when placing equipment in the chamber. The area can be insulated by riveting a piece of pressed asbestos to the rear of the sheet metal so it extends at least two inches beyond the connections in all directions.

To complete the chamber nail plywood or tongue-and-groove lumber to the outside of the frame. To provide further insulation, nail one-quarter-inch lattice to the outside edges of the chamber to provide a one-quarter-inch air space and cover the chamber with three-quarter-inch cellotex or similar insulating boards.

Make the door to fit tightly into the front of the chamber and insulate it the same as the sides of the chamber.

A small electric fan should be placed in the bottom center of the chamber as near the rear wall as possible. The motor should be placed outside the chamber and a long shaft made to extend through the bottom of the chamber. The fan should be inside the box and the motor outside. If the motor is placed inside, the heat affects the

oil and causes the bearings to burn out. If the motor is placed inside it should be a heat resistant type. The fan produces a circulation of air; otherwise, the hot air remains at the top and there will often be a difference of temperature between the top and bottom of as much as 30 degrees F. An electric thermostat should be placed near the top center of the chamber to hold the temperature at any desired point. The thermostat for the chamber may be purchased from electric supply dealers along with the units. The thermostat is set at a temperature near 180 degrees F.

The entire bottom of the heating chamber is covered with a sheet of galvanized iron. The edges of the iron should be bent up a quarter-inch in the form of a pan to hold any honey that may be spilled on it. The pan should be loose so that it can be removed and cleaned at any time. The size of the sheet of galvanized iron for this job should be 24½ by 23 inches.

Place Cans on Iron Pipes

THE TWO 60-pound cans should be placed on two three-quarter-inch iron pipes. The upper pipe should be five inches from the ceiling and two inches in front of the sheet iron. The lower pipe should be 17 inches from the top and 10 inches from the sheet iron. This arrangement will permit the cans to lean back at the top so that the crystallized honey will not close the openings.

A small one-eighth-inch hole may be bored in the corner of the can opposite the opening. Then the last honey will drain out. The hole is soldered shut later if the can is to be used again.

Provide Shelves for Containers

When bottles of crystallized honey are to be liquefied they should be placed on shelves made of slats three-quarters of an inch square. The slats are nailed three-quarters of an inch apart on two one and one-half inch strips of wood. This type of construction of the shelves permits a free circulation of air, Fig. 2.

The shelves should be spaced according to the size of bottles or cans used. The shelves rest on two strips of wood, one screwed to either side of the chamber. The strips can be removed from the chamber when not needed. When a bottling tank is put in the chamber it is placed on two stands, each made from one lengthwise piece and one cross strip of wood. These stands are made to be six inches high. One stand is built 14 inches long and 10 inches wide, the other 14 inches long and five inches wide. A few one-inch holes bored through the strips making up the stands, permit a free circulation of air under the tank.

Directions for Making the Bottling Tank

Construct a metal tank 20 inches long by 12 inches wide by 10 inches deep. This tank can be made of stainless steel, monel metal, or galvanized iron. If galvanized iron is used it should be No. 26 gauge. A heavier gauge is used for larger tanks. Allow an area of the bottom to extend two inches below the other surface. The lowered portion is constructed 10 inches square and is soldered four inches from one end and 10 inches from the other end. This arrangement provides a tank with a two-inch drop in the bottom.

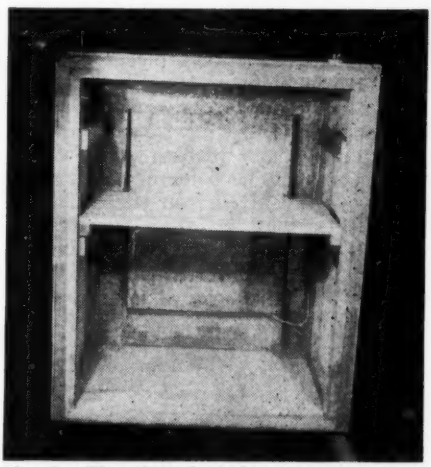


Fig. 2.—The slatted shelves permit a free circulation of air.

Provide an outlet in the center of that part of the bottom which has been lowered. Cut a hole for a small section of one and one-quarter-inch pipe. The pipe should be a one and one-quarter-inch galvanized iron union. Solder the union to the opening in the bottom of the tank and strengthen the attachment

with a boss. It is best to file the end of the union until it is flat before it is soldered to the tank.

The strainer has a three-sixteenth-inch section of one and one-quarter inch threaded pipe soldered to it which turns into this outlet pipe in the tank. A small nipple is turned into the other end of the union and a reducing L is placed on the nipple. The reducing L should have the small opening for a three-quarter-inch pipe. This pipe connects with the bottle filler which is a three-quarter-inch petrol valve; a brass oil gate type of valve also will serve very well. A strong wooden frame of 1¾ by 2¾-inch material is built around the tank. A solid box should not be used, since wood acts as an insulator.

Provide a Strainer

Make the strainer eight inches in diameter and four and one-half inches deep. Take two round pieces of galvanized iron eight and one-half inches in diameter and turn down the edges three-sixteenths or one-quarter of an inch to provide a surface upon which the screen may be soldered. Cut four pieces of galvanized iron six and one-half inches long by three-quarters of an inch wide and bend one inch of both ends to form a right angle. Rivet the four U-shaped pieces of galvanized iron to the discs to hold them four and one-half inches apart. Cut a hole in the center of one disc the same diameter as the inside of the outlet pipe and solder the small section of pipe to the disc. Solder the 80 or 100-mesh screen over the space between the discs. Then solder a handle on the solid disc. This completes the strainer. When in use it is turned into the outlet pipe and all honey must go through the strainer before it can flow from the bottle filler.

The bottle filler can be pushed back under the tank and the chamber door closed while the honey is being heated.

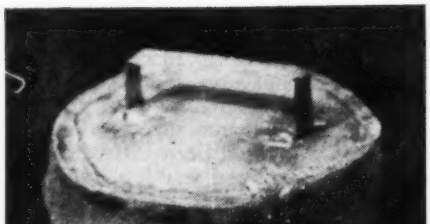


Fig. 3.—The strainer for the bottling tank.

Gleanings Visitor

Gabriel Moral, 28, of Haifa, Israel, visited Gleanings on July 23 after touring the United States and visiting beekeepers and experiment stations. Mr. Moral extends his appreciation to all of the cooperating beekeepers and experiment station scientists who made his stay enjoyable and educational.

The role of the dealer

by R. B. WILLSON, President
National Honey Packers and Dealers Association

IN THE HONEY industry wholesale buyers from producers, generally speaking, are packers or dealers. The former repack the honey into containers for household consumers. They are sometimes called bottlers. Dealers buy honey to resell as a bulk commodity, and the fields in which they operate are wide and diverse. Of course, one may be both packer and dealer, but for the purpose of this article let us confine our observations to the latter.

Harold Clay, the lovable and always dependable honey marketing expert of the United States Department of Agriculture, once figured out that about one half of the commercial honey crop of our country goes for industrial uses. When it is realized that dealers furnish most of this, as well as supply a good part of the honey that is bottled, and that they also do almost all the jobbing and exporting, it becomes obvious that in the distribution of our national honey crop they fill an important role.

But are they necessary? Are they not mere middlemen and should not the commercial honey producer sell the trade here and the European buyer directly. He certainly has that opportunity, but let's take a look at some critical down-to-earth business factors that are involved.

Business Factors Involved

1. The big city buyer of honey for industrial purposes acknowledges he is no honey expert, and almost always he has many other things to buy. He has no time to carry on an extensive correspondence with hundreds of beekeepers to check the market, so he buys from a dealer and thus has the services of an expert, as a honey dealer must be these days, who not only knows the market but is at hand in case of any trouble with the delivery.

2. More and more industrial users of honey want their honey processed. Bakers want their honey just as ready for use as their flour. Since probably not more than five per cent of the honey in our country is processed by producers, many dealers maintain processing plants, or have developed processing services at the source of supply, so that carloads or truckloads come to the big city market processed, and thus are on hand in less carload lots to the baker or other industrial user not geared to buy in larger quantities.

Catering to the needs of the industrial user with "ready-to-use" honey has expanded the commercial use of honey here at home. Our very good friends in Canada, with their accent on crystallized honey have, as far as we know, not one single loaf of bread sold by the trade made with honey. Perhaps there is food for thought here.

3. Perhaps his greatest service is the dealer's buying of honey in carloads and keeping it in stock for the buyer who wants to buy in smaller quantities. This is called jobbing. Some customers want orange honey, some clover, some alfalfa, some sage, and so on. The dealer carries in stock those varieties his market requires. His investment may be heavy, and if the author's experience is typical, his profits are small, as the only possible way to make money in bulk honey is by doing a large volume.

4. Then, too, there is the matter of credit. Producers like to sell for cash "draft attached to bill of lading", as they say. The dealer will buy on such terms but the industrial user will not. He wants to pay after he has taken delivery and had a good long look at it. Extending credit is another valuable service performed by the dealer.

5. How about the exports that have become so important only recently? Only the dealer is equipped to be an exporter and then only the dealers at our principal ports. No business is more complicated or full of red tape. Expert knowledge of many terms are needed, as: pro formas, certificates of origin, F.A.S., ex dock, sanitation certificates, dock receipts, C.I.F., C and F, full sets of on-board bills of lading, marine insurance, etc., almost ad infinitum. And such details are trivial compared to the intricacies of letters

(Continued on page 573)

Straining honey

by G. F. TOWNSEND and A. ADIE
Department of Apiculture, Ontario Agricultural College

Warming honey with electric cable for the small scale producer.

ALL EXTRACTED honey must be strained. The best and most convenient time to strain is immediately following the extracting process while the honey is still liquid.

If the honey is to be packed by the beekeeper in consumer containers, then it must be strained in a manner which will meet at least the minimum grade standards. If the honey is to be shipped to a repacker, it is necessary to keep in mind that in many cases the honey will be granulated before it is used for repacking. When granulated honey is repacked, it must be heated above the melting point of wax. Unless most or all of the wax has been removed at extracting time, the flavor of the honey will be impaired during the repacking process.

The straining requirements in Canada and the United States are similar. Canada Number 1, or U. S. Grade A, must be as clear as though the honey were strained through 86-mesh standard bolting cloth. Canada Number 2, or U. S. Grade B2, must be as clear as though the honey were strained through 23-mesh standard bolting cloth.

Difficulty in straining may be caused by one or more factors. The viscosity of honey increases very rapidly as it drops below 100°F., thus making cool honey very difficult to strain. The strainer cloth will clog very rapidly if the honey to be strained contains granules or a large volume of wax refuse. It will also clog rapidly if the incoming honey comes in immediate contact with the straining cloth without permitting the bulk of the refuse material to float to the surface.

For efficient straining of honey in volume, it is necessary to employ a sump tank, a suitable means of warming the honey, and a satisfactory strainer.

The Sump Tank

As the honey leaves the extractor, it is usually convenient to have it flow into a sump tank. In this tank the coarse material may be removed quite readily by a series of screen running across the tank. The series of screens should consist of ½ inch, ⅛ inch, and $\frac{1}{16}$ inch mesh. The honey may then either flow by gravity or be pumped into a suitable strainer.

Warming the Honey

In order to pass a quantity of honey through a suitable strainer without too much difficulty, the honey should be at a temperature between 100° and 120°F. Warming of honey in the comb before extracting is not sufficient. The main purpose of a warming room is to remove excess moisture and assist in the extracting procedure. Much of the heat picked up in the warming room is lost as the honey is extracted from the combs.

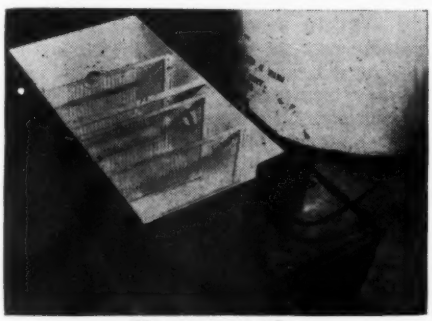
Since honey will drop from 10° to 20°F. in passing through the extractor, it is necessary to warm the honey somewhere between the extractor and the strainer. There are many approaches to this problem and they will be dealt with in detail in another article.

Heat may be applied to the sump tank by double jacketing it and using either steam or electric immersion heaters. The honey may pass over a corrugated pan which is steam-heated, or the pipe through which the honey passes to the strainer may be double-jacketed and the honey heated by steam.

In either of these latter methods the honey must flow continually, and thermostatic controls are necessary. Lead-covered soil cables may be used where a little extra heat is needed, or where only small quantities of honey are being strained. The cables come in 30-foot (400 watt) or 60-foot (800 watt) lengths. A 400-watt cable will raise 100 pounds of honey per hour by 18°F. if it is wrapped around a pipe and well insulated.

Straining

WHEN THE bulk of the refuse material has been removed by a sump tank and the honey has been warmed to 110° to 120°F., several types of strainers may be used, or the honey may be settled.

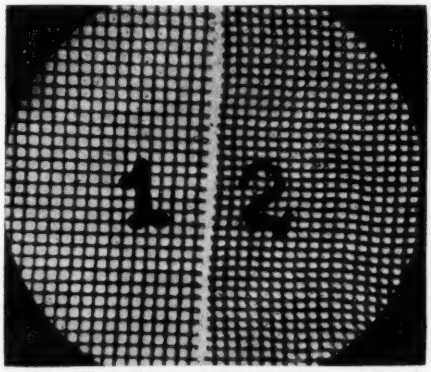


The sump tank.

Settling of honey may prove satisfactory under some conditions, but only if it passes first through a sump and then is allowed to settle for a reasonable length of time at a temperature of at least 110°F. The surface should be skimmed and the tank never completely emptied until the packing has been completed. Even when the best care is taken with a settling method, it is not possible to be sure that all of the honey is satisfactory. Only by the use of a strainer of suitable mesh can the operator be satisfied that all of the honey packed will meet the grade requirements.

Materials for Strainers

There are several types of cloth or wire which are suitable as strainers. It is necessary to use only those which will not stretch and which have the proper size of opening. Strainer cloths should not be bought by mesh alone.



Swiss silk bolting cloth. 1. New; 2. Used.

Canada Number 1, or U. S. Grade A, requires a straining through standard bolting of 86 mesh to the inch. Standard bolting cloth of this mesh has openings of approximately .007 of an inch. Some types of strainer cloth would require 100 mesh to the inch and others 60 mesh to meet these requirements, since the diameter of the strands varies considerably. Sheer Nylon 112-mesh, Swiss Silk 66-mesh, or Monel Metal screen with .007-inch openings are all satisfactory.

When choosing the type of metal screen to use, the operator must select

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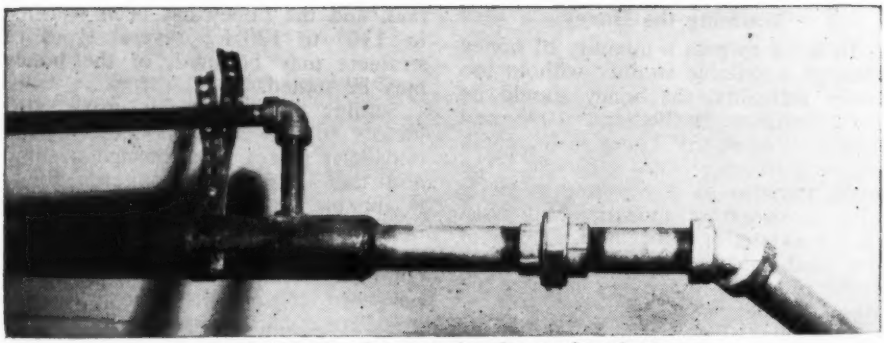


Jacketed pipe for warming honey for steam.

a metal which will stand up under the action of honey, such as a Monel metal. It is also necessary to choose a mesh of proper opening size with sufficient diameter of wire to stand up under wear, and at the same time having sufficient open area to handle a volume of honey. The 66-mesh Swiss silk will not be of proper size opening until it has soaked in water or has been used for a period of time.

For best results straining should take place below the surface of the honey, and the straining area should be as large as possible.

The O.A.C. Strainer, which has been widely adopted, consists of a series of three circular screens of different mesh, one inside the other. The honey enters the center screen, passes through to the outer and fine screen, and is drawn off by a baffle near the top of the tank. If a sump tank is used first and if there is no granulation in the honey, the O.A.C. strainer will handle honey at any rate of extracting at room temperature, provided the straining area is large enough.

Centrifuge strainer

The Modified O.A.C. Strainer employing one sheet of either Nylon or Silk will work just as satisfactorily as the O.A.C. strainer if the temperature of the honey is raised to 110°F. The cloth is placed in a round screen support inside a tank in such a manner that the cloth lies against the walls and bottom of the supporting screen. Since the screen is raised from the bottom of the tank by about one inch and the honey is taken off near the top of the tank, the straining takes place below the surface.

CENTRIFUGE strainers are fast and will handle large quantities of honey with some granulation. There is no draining problem at the end of the day's run, and the screens may be readily changed or washed. The most practical one to date is built on the same principle as the O.A.C. strainer with a series of three screens. The only serious objection to the centrifuge strainer is the incorporation of small air particles, which are difficult to remove. These, however, do seem to be kept to a minimum by the three-screen type.

The O.A.C. Pressure Strainer for Honey (see June '54 Gleanings) offers a completely new approach to straining honey. This strainer overcomes most of the difficulties presently encountered. It will operate for a long period of time without cleaning and will not clog with granulated honey if operated at a temperature of 120°F. The normal operating temperature is 110°F.

(Continued on page 572)

The toxicity of newer pesticides to honey bees

by J. E. ECKERT* and K. W. TUCKER†, University of California

THE IMPORTANT role that honey bees perform in the production of a majority of our fruit, vegetable, and seed crops, as well as the importance of the honey industry itself, makes it necessary to consider the welfare and safety of these pollinators in the various pesticide programs designed to control insect and fungous pests of plants.

Preliminary tests of pesticides can be made in the laboratory to determine their comparative toxicities and the results checked against field tests on various crops. Laboratory tests usually indicate the probable effect of the different chemicals when they are used in like dosages on plants in the field, although field tests are much harder to control and are less exact.

Various reports have been published to indicate that **dieldrin** is toxic to bees. Knowlton et al. (1950) in small scale field tests on alfalfa in bloom found 0.56 pounds of dieldrin per acre to be highly toxic to bees. Michelbacher et al. (1951), in conjunction with the use of dieldrin in melon insect control, found it to be highly toxic to bees that visited treated blossoms. Anderson and Tuft (1952) in laboratory tests found one per cent dust of this material to give 100 per cent kill of honey bees in six hours. Weaver (1952, 1953) in small cage tests on cotton, found dieldrin to be more toxic than "3-5-40" and also aldrin, but less toxic than parathion. Anderson and co-workers (1953) found that large scale applications of dieldrin caused heavy losses of honey bees in southern California.

The same investigators found that no apparent damage to honey bee colonies resulted when dieldrin was applied at the rate of one-third pound per acre to citrus when the hives were located in the citrus orchard, but surmised that the results were due to the small quantity of material that was applied to a relatively large amount of foliage.

* Professor of Entomology and Apiculturist, University of California
† Graduate Assistant in Entomology, University of California

Aldrin has also been found quite toxic to honey bees. Eckert (1949) in laboratory tests reported it to be relatively dangerous as a stomach poison, on contact and also as a fumigant, though less toxic than dieldrin. Knowlton and co-workers (1950) considered aldrin spray at 0.53 pounds per acre too toxic to bees for use on plants in bloom, though it was less toxic than dieldrin. Michelbacher et al. (1951) briefly noted that aldrin was quite toxic to honey bees. Anderson and Tuft (1952), found that aldrin gave a 100 per cent kill of honey bees in six hours. Weaver (1952, 1953) found aldrin more toxic than "3-5-40" but less toxic than dieldrin.

Very few reports have been published on the toxicity of **systox** to honey bees. Anderson and associates (1953), from laboratory dusting tests, concluded that one per cent systox dust appeared to be relatively nontoxic to bees. In a small scale field test by the same workers, 9.2 ounces of systox to the acre of cotton did no appreciable damage to colonies located near the border of the field; however, the bees were working on tamarisk, one-quarter mile distant, instead of on the cotton that was treated.

Methods Employed

THE FEEDING tests in this report were conducted in the same manner as those covered by Eckert in 1949.

Worker bees of an average age were placed in individual cages and fed through micropipetts known amounts of a given chemical that had been first dissolved in alcohol and then diffused through a 20 per cent sugar solution. The bees thereafter had access to sugar syrup and were observed at intervals over a period of three days, the cages being held in a humidified cabinet at a temperature of approximately 90°F. Twenty or more bees were included in each series with replications being made when the amount fed approached the median lethal dose.

Check bees were run under similar conditions to indicate the natural death rate. Normally, bees selected and held in this manner will live for many days when they have access to sugar syrup, unless they have been fed toxic substances.

This method of determining the comparative toxicity of the different chemicals as stomach poisons is tedious and time consuming but the collective feeding of a large number of bees was found to be far less exact. One could not determine how much any individual bee would take when caged with other bees. Also, it is the habit of caged bees to feed each other, which would tend to confound the results still more.

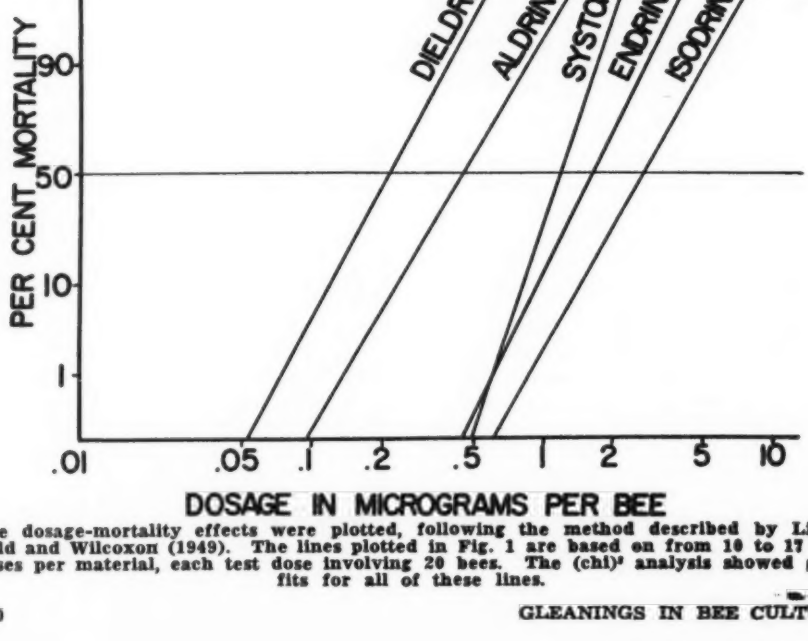
The results were plotted on logarithm-probability graph paper which tended to smooth the curves to straight lines. No attempt was made to increase the dosages until 100 per cent of the bees were killed. In most cases this did result.

Discussion of Results

Previous tests by Eckert (1949) indicated that 4.6 mmgs. of DDT were required to kill 50 per cent of the bees when the bees were held at room temperatures below 90°F. and approximately 12.0 mmgs. at temperatures around 95°F. Since DDT is considered as a comparatively safe pesticide when applied at approximately 1.5 pounds per acre (to row crops) while the bees are not on the blossoms, any chemical that is more toxic than DDT would be considered as too toxic to be applied to plants when bees are actively working the blossoms, unless applied under special techniques or timing.

Frequent applications of DDT to plants on which bees are working will reduce the populations of colonies below an economic working force, either for pollination or for honey production. Consequently, comparison of toxicities of different pesticides with that of DDT is not always a safe criterion.

The L/D-50 for aldrin, dieldrin, endrin, isodrin and systox are indicated in the accompanying graph and table as 0.45, 0.215, 1.63, 2.70, and 1.18 mmgs., respectively. This indicates that all of these substances are more toxic, as stomach poisons, than DDT, with isodrin being the least toxic of the five.



The dosage-mortality effects were plotted, following the method described by Litchfield and Wilcoxon (1949). The lines plotted in Fig. 1 are based on from 10 to 17 test doses per material, each test dose involving 20 bees. The (chi)² analysis showed good fits for all of these lines.

TABLE 1. Median lethal doses and 19/20 confidence limits for Dieldrin, Aldrin, Systox, Endrin and Isodrin.

Material	Median Lethal Dose	19/20 Confidence Limits Upper	Lower
Dieldrin	0.215	0.235	0.196
Aldrin	0.45	0.50	0.41
Systox	1.18	1.27	1.09
Endrin	1.63	1.78	1.42
Isodrin	2.70	2.95	2.47

Field Tests and Observations

OBSERVATIONS were made on the effects of aldrin, dieldrin, and systox on bee populations of colonies when the chemicals were applied to different crops. A report received from Chas. Reed of the Valley Pollination Service in Kern County, California, in cooperation with Mr. V. Burton of the Farm Advisor's Office, indicated that material damage was done to colonies located in or near an alfalfa seed field that had been sprayed with aldrin to combat grasshoppers. Approximately one-quarter pound of aldrin was applied to the acre.

The application of dieldrin to thousands of acres of rice was made necessary during the early summer of 1953 by an infestation of the rice leaf miner. Some beekeepers in Colusa County reported serious losses to several hundred colonies. In western Yolo County a beekeeper reported economic loss to 1,000 colonies located near rice fields that had been sprayed with dieldrin.

An examination of several apiaries near rice fields in another part of Yolo County by Eckert, with the owner, revealed that some were injured by a reduction in population of 25 to 50 per cent while other colonies appeared to be uninjured.

Hives of bees were located in and near a portion of a cotton field which was then sprayed from the air with 10 gallons of a solution per acre containing four ounces of systox. Two passes were made over certain hives, thus doubling the amounts in that area. Observations made by Eckert, County Inspector V. Hayden, and Chas. Reed* indicated a reduction of 7.5 per cent in colony strength and a decline of 8.4 per cent in the number of bees returning with pollen to the hives over which spray was applied.

* Chas. Reed, Manager, Valley Pollination Service, made the arrangements for this field test and assisted in making observations.

The results of this test may have been confused by the application of DDT to adjacent cotton fields on the morning following the application of the systox spray. Such tests as this one should not be considered as too significant because the flight of bees usually extends over a radius of one and one-half miles so that a majority of the bees may not be contacted by the sprays even though their hives are in the direct path of the spray. On the other hand, if bees are clustering out on their hives when toxic sprays are applied, serious damage to colony strength might result even though the bees are not working blossoms in the field sprayed.

The low dosages of certain chemicals, such as systox, aldrin, and dieldrin, that are applied per acre will tend to reduce the overall effect on the nectar and pollen gathering bees. The nature of the cotton blossoms in closing near the end of the first day further mitigated the possible injury from systox or other poisons applied late in the afternoon. However, bees work the exposed extra-floral nectaries of cotton and thus are affected by contact poisons and stomach poisons applied to leaves and stems.

Conclusions

The conclusions that might be drawn from the toxicities of these five chemicals would be that all of them would constitute a danger to pollinating insects if they are applied to plants in bloom at a time when the bees were working the blossoms for either pollen or nectar. However, the fact that systox is absorbed by the plant tissues to be translocated in different parts by the vascular system of the plant would make it less injurious than here indicated, especially so if the chemical is not given off in the nectar. We have not checked this factor, nor have we observed the effects of its application

(Continued on page 570)

Honey bees increase seed yields of cultivated sunflowers

by BASIL FURGALA
The University of Manitoba, Winnipeg, Canada

Typical sunflower field populated with honeybee colonies

THE CULTIVATED sunflower is grown for seed in many countries, the largest producers being Russia and Argentina. However, due to the shortage of vegetable oils during World War II, and because of the high quality of sunflower oil, the United States and Canada are now growing limited acreages of this crop. In the United States, the sunflower has become a staple crop in Kansas, Missouri, and California, while in Canada practically the entire sunflower seed crop is produced in Manitoba.

Because the sunflower florets are practically self-sterile the sunflower is considered a cross-pollinated crop. The individual florets of the sunflower head are crowded together, and because of this a large number of florets can be pollinated by a single insect visit, a perfect condition for insect pollination. However, with a scarcity of insect pollinators some self-pollination may take place at a later stage if cross-pollination has failed.

A number of Russian scientists have reported that placing colonies of honey bees near sunflower fields increases the seed yields. One worker found that the seed set was increased between 25 and 30 per cent, and that the honey bees visited the sunflower crop chiefly for nectar. He concluded that areas sown with sunflowers must be provided with apiaries for pollination.

In North America very little work has been conducted on the possibility of increasing the seed yields of sunflowers by using populations of honey bees, but preliminary investigations conducted in Manitoba to determine the effect honey bee populations have on sunflower seed yields and hybridization are very encouraging.

Plot investigations were initiated by the Department of Entomology at the University of Manitoba to compare the percentage of seed set of open-pollinated heads with that of covered heads which excluded the larger insect pollinators, particularly the honey bee. Yields were determined from open-pollinated plots and from plots which excluded the larger pollinators.

The seed set of the open-pollinated heads visited by honey bees was 268 per cent higher than in those heads which were covered with eleven-mesh netting. The yields of open-pollinated plots were 212 per cent higher than in the mesh-bagged plots. These increases

in seed set and yield of the open-pollinated plots may be attributed to the presence of the larger pollinating insects, particularly the honey bee, since the honey bee was by far the most numerous visitor of the larger pollinators.

Further field experiments were carried out in the sunflower growing area of Manitoba. Eight commercial fields planted to the varieties Advance hybrid, Advance-Sunrise mixture and S37-388-Sunrise (crossing block for the production of Advance hybrid) were selected for the trial.

Two crossing blocks, one Advance, and one Advance-Sunrise mixture fields were populated with Italian honey bees as soon as the flowering period commenced. The colonies were slightly weaker than average but were all in the proper condition for pollen gathering since each colony was rearing brood. The honey bee colonies were situated along the east side of each field. The four unpopulated fields were isolated by at least three miles from honey bee colonies.

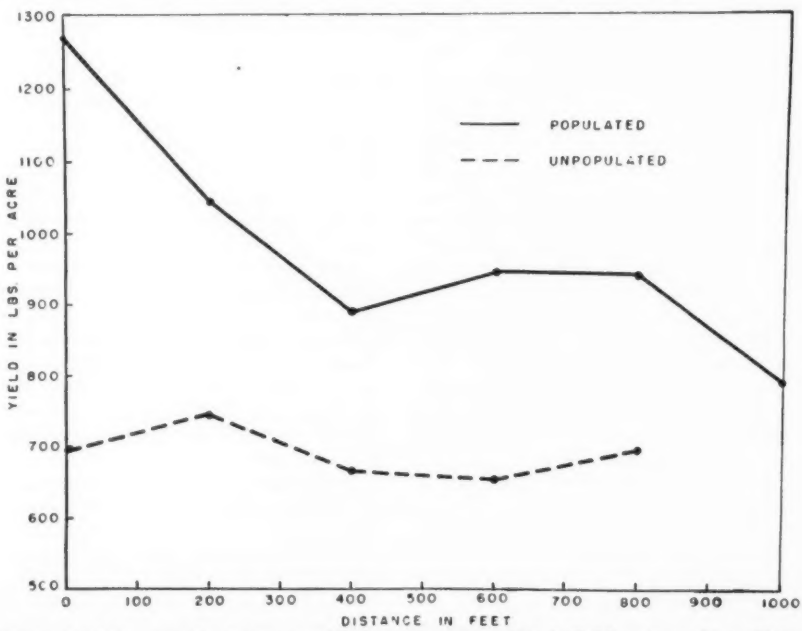
Determining Floral Competition

The attractiveness to honey bees of the sunflower in competition with buckwheat and other late flowering species of wild plants was determined by collecting and examining honey bees for sunflower pollen. About 50 per cent of the honey bees examined carried sunflower pollen. When honey bees visit a sunflower head they become well covered with pollen. Because of this fact the majority of the nectar-gatherers as well as the pollen-gatherers pollinate a considerable percentage of the flowers.

When the plants matured rod-row samples in triplicate were taken at intervals of 200 feet from both the populated and unpopulated fields. The seed was threshed, cleaned, and yields were obtained. The seed yields significantly decreased as the distance from the honey bee colonies increased. Unpopulated fields showed no significant differences between the yields at the various distances.

THE RESULTS of this field study show the importance of populating commercial and crossing block sunflower fields with honey bees to obtain greatly increased yields.

The hybrid Advance is the variety most commonly grown in Manitoba. It is produced by growing alternate



Average yield in pounds from populated and unpopulated fields at various distances from the honey bee colonies or the edges of the fields.

rows of Sunrise (male parent) and S37-388 (female parent). Cross-pollination is left to whatever insects nature has provided for that particular area. The seed of the S37-388 is harvested as the Advance hybrid.

It has been established that the percentage of hybridization is quite low in many fields. To determine if honey bees increase hybridization in crossing block fields, randomized samples of female parent seed from the crossing block fields in the experiment were planted in the greenhouse and following a method being developed by Stefansson*, the seedlings were classified as hybrid or inbred.

The commercial crossing block fields populated with honey bees had approximately 87 to 92 per cent more hybrids than the unpopulated fields. The difference in the percentage of hybrids obtained from the populated and unpopulated fields gives strong support to the view that the presence of honey bee populations is necessary to increase the cross-pollination of the sunflower.

This study was concerned only with the effect of honey bee populations on the seed set, yield, and hybridization of the sunflower. However, Professor A. V. Mitchener, Department of Entomology, the University of Manitoba, in honey flow studies found that a scale colony in the sunflower growing area gained almost as much (104 pounds) in the 15-day period between August 23 to September 6, 1950, during the sunflower-flowering period, as it had gained (114 pounds) over a period of 50 days between June 29 to August 17, 1950. This indicates that the beekeeper as well as the grower benefits from the placement of honey bee colonies on the fields.

It may be concluded from this preliminary study that populating commercial sunflower fields with honey bees increases the seed set and yields of the sunflower crop. Honey bees are also instrumental in increasing the hybridization of commercial Advance seed. There are also some indications that this crop may be used by honey bees for a late honey flow.

* Unpublished data by B. S. Stefansson, Division of Plant Science, The University of Manitoba, Winnipeg.

Dysentery Not Caused by Poor Winter Stores Alone

by WILLIAM K. DAVIS, PROVIDENCE, R. I.

IT IS MY BELIEF and from observation within the past winter that bees suffer from dysentery not because of the type of stores available but the number of bees that are available to make up the winter cluster.

Colonies that are strong in number will be able to maintain hive temperatures with a minimum consumption of stores. Only those colonies with small numbers of bees will suffer from the effects of dysentery due to the over-consumption of stores which has a tendency to burn the life energy out of the bee and finally wear it out. Bees burn and wear themselves out in an attempt to keep a survivable temperature within the cluster. This is especially true of colonies going into winter cluster with few bees.

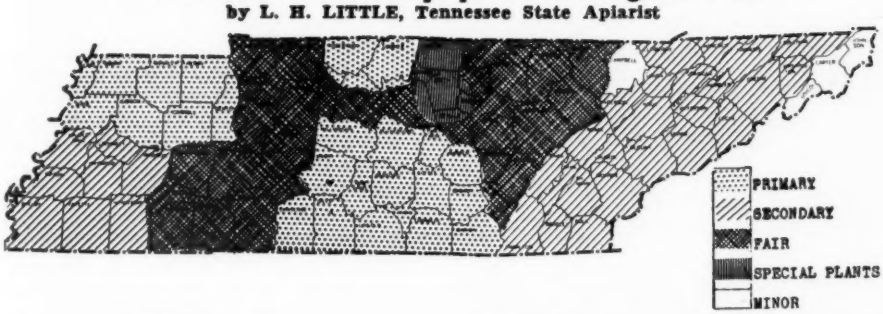
The beekeeper can do much to prevent dysentery within his colonies by assuring that the queen has ample room to continue egg laying right up to cold weather. Honey-bound colonies are apt to suffer considerably from dysentery due to the restricted number of eggs the queen is able to lay. This has two very damaging effects upon the colony. First it cuts down the life span of the bees within the cluster in an attempt to maintain a survivable hive temperature. Secondly, it restricts normal flights when the opportunity presents itself.

I had an opportunity to observe my colonies closely last winter for here in New England the bees have been able to take cleansing flights approximately every 14 days. Those strong in bees showed no tendencies toward dysentery, and they were able to have flights when the weather warmed up to 50 degrees or higher.

Only one colony had suffered from dysentery and that colony became honey bound during the rapid fall flow which drastically cut down the egg-laying area in the brood chamber and consequently the usual number of young bees necessary for proper wintering were not present.

Tennessee honey producing areas

by L. H. LITTLE, Tennessee State Apiarist



Primary Area

THIS REGION is best suited for crimson clover, and hairy vetch, which are the two plants most dependable for commercial beekeepers. There are many other plants in these areas which could be mentioned but not regarded as important. The honey flow starts from crimson clover around April 20th and lasts about ten days, and if weather conditions are favorable a good crop can be expected. This is followed immediately by vetch which lasts about two weeks. These two plants produce best on deep acid soil. However, in the central region much of the soil is limestone and good crops are harvested.

Secondary Area

Southwestern Region. This region can be called the low lands and the plants are white clover, soybean, cotton, vetch, and some crimson clover. There are also many other nectar sources of minor importance but add much to the success of the commercial beekeeper.

Eastern Region. Unlike the southwestern area this region depends almost entirely upon nectar-bearing trees. This section is very mountainous with an altitude of several thousand feet above sea level. The trees most dependable are sourwood, tulip poplar, sumac, persimmon, and many others.

Some of the level land in this area has been converted from row crops to permanent pastures and promises to become one of the best beekeeping sections. These pastures will provide white clover which yields quite well at this high altitude. Sourwood which is considered the major source comes in late June and July.

Many commercial beekeepers move from the central section when the clover and vetch flow is over (about June 25th) to the mountains where they reap another good crop. Much more could be said regarding this section but time and space will not permit.

Marginal (or Fair) Area

Only a few larger beekeepers will be found in this area as the land is somewhat brush covered with lakes, rivers, and small streams. Along the Tennessee river the land is very fertile and the crops are mostly corn or others that are of little importance to the beekeeper. Around some of the lakes Spanish-needle is considered a good nectar source but found only in few locations.

Area of Special Plants

This area has a few large beekeepers who produce a honey unknown to almost every beekeeper, even those who have lived in the area all their lives. The rare plants are dodder and mountain stickweed. There have been reports of these plants producing in other places but they are the lone source in this particular area. Beekeepers in this section have produced 60 to 90 pounds of this honey which has a very decided flavor but not a poor table honey.

Minor (or Poor) Area

These few counties have very few beekeepers, at least not enough to bother to make reports. We hope to learn more about these counties and perhaps will find they too have unusual honey plants. Who knows. When you consider Tennessee has an altitude of only a few hundred feet to several thousand feet then you may not wonder why it has so many different nectar sources and still be a minor honey-producing state.

B & Z Library

Rye with honey brings more money

by W. E. BROEG, International Milling Company, Minneapolis 1, Minn.

THOUSANDS OF YEARS ago ancient Egyptians used honey as a sweetening agent in their cookery. In fact, many of the ancient Egyptian tombs contain jars of honey for the occupants so that upon awaking, they would have the best food to eat! Today honey is still a popular item in man's diet.

In a bake shop the use of honey is a real selling point for any product because the housewife believes—as the ancient Egyptians did—that honey is pure. For a truly tasty specialty, combine nature's own tangy honey flavor with the fresh fragrance of rye flour, and make the tastiest bread loaf yet; Honeybee Rye! The name is "different" and so is the taste of this outstanding specialty loaf.

The old-time Honey Rye Bread recipe has been handed down from generation to generation. The recipe is simple, the ingredients wholesome and the taste exceptionally pleasant. The original household recipe calls for:

4 cups honey
2 cups buttermilk
8 cups sifted rye flour
8 teaspoonsful baking powder

Combine the honey and buttermilk and bring to a boil. Remove from heat. Let cool to lukewarm. Add rye flour and baking powder sifted together. Pour into four greased 9 x 5 x 3 inch bread pans; let stand 20 minutes. Bake in a moderate oven (350°F.) for 45-50 minutes. Yields 4 loaves.

The following baker's formula is merely an expansion of the old-time recipe:

4 Loaves			16 Loaves	
		Bring to full boiling and cool to lukewarm:		
Lbs.	Ozs.		Lbs.	Ozs.
2	8	Honey	10	
1		Buttermilk	4	
		Cool to lukewarm then mix in thoroughly		
1	8	Medium Rye Flour Sifted	6	
	1	Baking Powder (Amt. variable)		4

Note: Mix only enough to smooth batter or dough. Weigh immediately into heavily greased or heavily greased and flour dusted pans. Allow one pound, six ounces to one pound eight ounces for a 9 x 5 x 3¼" pan or weigh one pound, four ounces into an 8 x 4 x 3" pan. Let weighed loaf set 20 to 30 minutes then bake approximately 45 to 50 minutes at 350°F. Avoid strong, overly flavored honeys. Usually clover types are preferred. Alfalfa or sage honeys may be too pronounced in flavor. Fresh or cultured type buttermilk should be used. Amount of baking powder is variable for altitude, texture and volume desired.

An Allergy Special

Something that sets the Honeybee Rye Loaf off in a class by itself is the fact that it oftentimes is a boon to those people who are allergic to wheat products. Many such people find that Honeybee Rye is just the thing to provide a pleasant change to an otherwise limited diet. In such cases, the simple nutritious ingredients of the bread actually supply a dietetic need.

Reduced Salt or Reduced Fat Diets

Although frequent reference is made to "salt or fat free diets", actually most food compounds contain "natural" salt and fat. As you can see, the Honeybee Rye Bread Formula contains no salt and thus can serve as a basic part of meals for persons on salt reduced diets. Because the formula contains no added fat or shortening, many persons on fat reduced diets will enthusiastically welcome it into their daily menus.

Modifications

Many modifications can be used to change the taste emphasis of the basic Honeybee Rye formula. You can add free-flowing diced dates, moist plump raisins, chopped black walnuts, natural almonds, pecans, fine chopped orange peel or glace fruits. Any of these will produce a delightful taste treat that customers will ask for again and again.

The overall cost of the loaf is certainly in line, even with the extensive use of pure honey in the recipe. If your shop is in an area where price is of primary importance, you can reduce the loaf cost, but admittedly some of the distinctive honey flavor will be

lost. Half the honey called for in the original recipe can be replaced with enzyme converted corn syrup or a blend of this and the finest grade unsulphured molasses.

When the name "Honeybee Rye" is used, honey should be the only sweetening agent. If other agents are used, the loaf should be named appropriately. Glace orange peel can be used to produce "Orange Blossom Honey Rye" etc. Orange combined with rye is a particularly delicious flavor. The same principle can be used in the preparation of Black Walnut Rye. With enzyme converted corn syrup replacing some of the honey, the cost of the black walnuts can be offset. Buttered sliced natural almonds, sprinkled in the bottom of the pan and on top of the loaf (or even mixed in) add a different and interesting taste characteristic.

Be Careful of Japanese Buckwheat

by PAUL HADLEY, Philadelphia, Pa.

THERE IS a plant which is becoming quite widespread in some sections of the east, that, while liked by bees, is a plant that can become a serious pest. This is the Japanese knotweed, also known by other names such as Japanese buckwheat, Inch-a-day, and Devils Own. The botanists call it **Polygonum cuspidatum.**

This plant, like many other pests, is an immigrant from the Orient. It is sometimes planted as a tall ground cover, and it certainly does its work well, for it will soon cover the area in which it was planted, and a large area of surrounding ground, besides. It is not without beauty, and has masses of feathery white bloom in late summer and autumn that are eagerly sought after by bees in a season when other honey plants are somewhat scarce.

Japanese buckwheat is a relative of the wild smartweed, or heartsease, and also a relative of the cultivated buckwheat. But it makes a tall, weedy growth, sometimes six or eight feet in height, springing up from the ground each season. Once established, it is almost impossible to eradicate, for the tiniest portion of a root left in the soil will result in a vigorous new plant.

Flowers of the Japanese knotweed (often called Japanese buckwheat) is a rank-growing emigrant from the Orient that can be a serious pest.

Beekeepers who have a plot of land useless for other purposes could possibly benefit from this plant, but it should not be planted in places where it is not wished to remain permanently. It likes rather low, loamy soil, and makes an astonishingly rapid growth, resulting in one of its nicknames, Inch-a-day.

In 1952, Walter Barth, now Associate Editor of Gleanings, conducted a study of honey flora of New York State while he was a graduate student at Cornell University. His observations with Japanese buckwheat indicated that it was a poor pollen source but of considerable nectar value. Mr. Barth found that the average sugar concentration of the nectar ranged from 40.8 to 55.8 per cent with an average of 50.7 per cent.

Know your containers

by CHARLES W. GOUGET, Glen Ellyn, Ill.

Well presented ideas are emphasized by repetition with uniform jars and uniform labels. Constant repetition of the right ideas properly presented means more sales. Uniformity also produces an unbroken "mass effect" so often necessary to attract "impulse" buying.

THE INCREASING use of self service in our modern stores makes it imperative that each product must sell itself. For honey, this means that an attractive container and an attractive label must be the silent salesman.

An attractive container is one that has eye appeal in keeping with modern trends, and utility appeal as well. It means that the container should identify the product and the sponsor, that it should open easily and provide convenient access to the contents, that it should handle conveniently, and above all, it should look well when stored on the shelf in a store.

Size of the Container

A dealer usually has very definite ideas as to the size of the honey package he can sell in his store. Although his judgment is usually correct the only real test in the matter is to offer a few different sizes to the customers.

Large three or five pound jars of honey which normally do not sell well from a shelf may be sold in considerable quantities by personal salesmanship where the storekeeper knows his customers, in which case he may know the honey eaters among them.

"Honey eaters" use honey daily, and most of them prefer to purchase a large quantity rather than a number of smaller ones which cost more. Often many such customers, or potential customers, do not know where to buy honey locally in large quantities, unless it is sold by the grocer, and as a result may purchase none at all. This fact may help to explain the often unexplained phenomenon where a store on one side of a street may sell only a few one pound jars of honey per month while another store only across the street may sell several hundred pounds of the same brand in larger jars.

Apparently "honey eaters" look for larger quantities of honey and will "gravitate" to the place where they find the larger amounts. However, while a wide variety of sizes may be suitable to a wide variety of customers, and profitable to the dealer, it is usually not profitable for the producer. From his standpoint one size is the most economical, and in most cases two sizes should be the limit.

Shapes of the Containers

The shapes of some honey jars are pleasing to the eye, others are ugly. Jars of the old Mason jar type which includes the so-called "Economy" jar are outdated and outmoded, and do nothing for honey except make a light-colored honey look darker.

A good package will emphasize quality by its general appearance, which will correspond at least in some measure with the art trends of the times. Old jars with antiquated styles show only "horse and buggy" progress in an atomic age, in addition to a lack of initiative and imagination.

In selecting a jar or container to sell honey the utility of the container to the consumer is an important consideration. Most consumers are preju-

diced against honey jars that tip easily, that are awkward to handle, or which have little access to the honey through the mouth of the jar. A good jar would be, therefore, one with a relatively broad base; one which will feel comfortable in the hand and one that has an opening large enough to insert a large spoon.

If the tops of small honey jars sold in stores could be made to correspond to the tops of most small dispensers, the clip-off top of the dispenser could be placed directly on the small honey jar without pouring the contents into the dispenser. This arrangement would be both labor saving and honey saving, two very good selling points. In some cases it may be possible to give away a clip-off top with a quantity purchase. The word "free" is a magic word and provides a good incentive to purchase.

In a like manner honey spreads can be sold to better advantage in fancy, plastic ice-box containers. Plastic containers are new, sparkling, and up to date in design, and most of them do something for almost any product placed in them.

Although the cost of plastic containers may be too much for a product like honey with a small margin of profit, many housewives are willing to pay more for an item that appears to have additional utility around the home.

In many communities plastic containers will sell honey spread at a much higher price than glass or cardboard containers, and in addition, they are "tops" for stimulating "impulse" buying.

Illusions of Size

MOST CUSTOMERS will notice very little difference between the size of the two pound Economy jar of honey and the three pound size, but they will notice the difference in price. As a result they will usually purchase the smaller volume without reading the label, consequently working an undue hardship on the producer. It would seem, therefore, unwise to use two containers of different sizes that show little apparent difference between their two volumes especially if they are to be sold together on the grocer's shelf.

On the other hand, two jars with exactly the same volume may appear to be much different in size, so much so, in fact, that the customer will actually believe that he is getting more for his money, unless he should happen to read the labels on other jars that appear much smaller, and even then he may not be fully convinced. This illusion can be used to advantage where a producer finds that his competitor uses a short, wide jar.

Illusions of Color

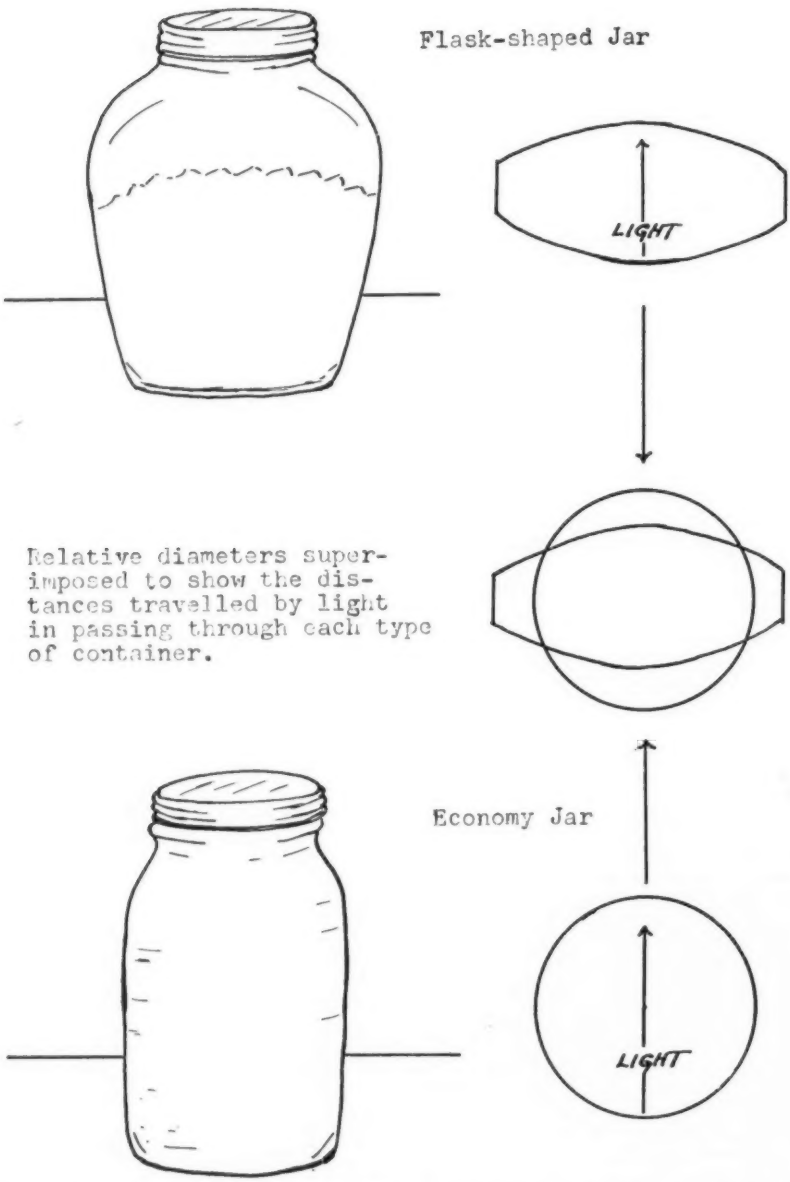
The apparent "color" of honey varies with its volume. This means that honey will appear to change color with the amount of light that is able to pass through the sample. For example, a light clover honey in a small straight-sided, cylindrical jar of short diameter may appear almost white, but the same honey in a five or ten pound glass container may appear amber or dark amber in color.

The size and shape of the honey jar and the color of the glass, therefore, are important factors that influence the apparent color of honey sold in glass jars. Obviously, tinted glass tends to shut out more light than clear glass and as a result less light will pass through the honey, and it will appear much darker.

Glass containers should be made of clear, white glass without imperfections, and the shape should be such that it will expose the greatest light surface to the shortest diameter of the jar.

Since the diameter of a round jar never changes the distance that the light passes through the honey cannot change, consequently the honey appears the same color from any direction. This fact may not be an objectionable feature in a small straight-sided jar of short diameter, but as the size and diameter of the round jar increases less and less light passes through until the honey may appear almost black. The same effect is not produced in oval or flat jars that expose a greater surface to light.

A GROUP OF honey jars on a grocer's shelf, made up of odd sizes: large, small, wide, narrow, and tall, produce a very unprofessional appearance. Each jar in the mixed group will allow a different amount of light to pass through so that the same honey will appear both light and dark in


Flask-shaped Jar
LIGHT
Relative diameters superimposed to show the distances travelled by light in passing through each type of container.
Economy Jar
LIGHT

A comparison of the diameters of a one pound Economy Jar and a one pound flask-shaped jar indicating the relative distances travelled by light in passing through equal volumes of honey. Actually, the light must pass three fourths of an inch farther through the Economy Jar increasing the amount of light absorbed by the honey and making a light amber honey appear very dark in color. Such a honey will absorb about 90 per cent of the light passing through an Economy Jar, and only 88 per cent in a flask-shaped jar. This five per cent difference may make the difference between a sale or no sale at all.

Type of Jar	Wt. Volume	Outside Dia.	Light Absorption
Straight-sided	½ lb.	2⅛ in.	88%
Straight-sided	1.01 lb.	2½ in.	90%
Economy	1.0 lb.	2¾ in.	93%
Economy	2.0 lb.	3½ in.	95%
Economy	3.0 lb.	4.0 in.	96%
Modernistic	½ lb.	1¾ in.	85%
Modernistic	1 lb.	2½ in.	90%
Modernistic	2 lb.	2¾ in.	93%

color. In addition, odd sizes tend to be irritating to some shoppers and cannot produce the "mass effect" so often desired to attract attention in selling commodities.

Having once attracted attention, "uniformity" tends to emphasize important ideas by repetition, provided, of course, that they are well presented. If the ideas suggested are good, and they are presented in the same way, with the same emphasis, jar after jar, as the eye follows the grocer's shelf, a sale may result, but if emphasis is placed on the wrong ideas then a sale may be lost.

Good labelling, therefore, is very important regardless of the size of the container, and should be considered a "must" to maintain good sales.

Light Absorbed by Honey in Bottles or Jars

A honey jar that must have an electric light behind it to make the honey it contains appear its "natural" color is a poor jar for selling honey. Honey absorbs light in direct proportion to its color, density, and volume, consequently jars of comparatively thin diameters are best for exhibiting the true color of the honey sample.

A well selected jar will improve the appearance of almost any honey, much as cellophane will improve the appearance of almost any package, but a poor jar can do nothing for a dark-colored honey but make it appear much darker. The above table will make this point more clear.

The light absorption results in the above table were obtained by passing a square inch beam of light through each jar of honey. The light beam measured 100 candle power at the point of entry into the jar, and the amount of light absorbed was calculated by subtracting the candle power leaving the opposite side of the jar from one hundred. The results are not intended to be scientifically accurate, but they are relative enough to show how important it is for every beekeeper to "Know Your Containers".

Big honey crops are harvested in Montana. Another good crop of white honey is in the making here in an outyard of Wm. McKibben of Livingston (shown in foreground).

Costly Drought Getting Worse

by WALTER BARTH, Associate Editor

Shaded area shows general drought region in the United States.

IN THE DROUGHT areas of the United States the honey crop is reported to range from poor to a disastrous failure, and regardless of the midland light rains that fell during the early part of July, the Federal Weather Bureau is not expecting an early break in the devastating drought.

The abnormal heat together with the lack of rain is causing trouble for beekeepers in many areas. Some localities will be declared a drought disaster area to permit government loan help.

Subsoil has been drying up and underground water tables for wells and irrigation are far below normal in the drought area, according to the Interior Department's Geological Survey.

One of the most serious phases of the drought has been the revival of the Colorado-Oklahoma-Texas dust bowl of the 30's. If the drought continues parts of western Kansas, dry for two years, will be added to an area already as large as it was in 1935.

Some observers believe next year will see relief in the dust bowl. Soil conservationists are campaigning again, as they did in the 30's for letting that region go back to grass and never be plowed up again for grain. This would be a great thing for beekeeping.

Here are state by state highlights recently reported by the Weather Bureau:

Illinois—No deterioration yet in northern third, but much damage by wind blasting to corn and soybeans in southern two thirds. Many beans dropped their blooms in south and central due to heat. Pastures very poor.

Iowa—All sections need moisture. Pastures dried considerably. Corn firing in southern third and in parts of western third. Much of crop in south will have to be harvested as fodder.

Indiana—No surplus moisture anywhere. Drought and extreme heat damaged corn and soybeans in southern half. Recent rains in northern area may help fall honey plants.

Michigan—Crops thriving; excellent corn.

Ohio—Soil drying rapidly. Pastures very short. Good stand of goldenrod coming on in north as a result of recent rains.

Wisconsin—Crops doing well.

Missouri—Record high temperature,

(Continued on page 571)

Nuc Box for Wintering-over Queens

by JOHN D. HAYNIE, Florida Agri. Ext. Service, Gainesville

THE MATERIAL needed to build the five-deep brood frame hive is very often available and reasonable in price. One can obtain Western apple boxes from almost any grocery store. If these boxes are carefully taken apart, two of them will build one five-deep brood frame hive and the ends from one box left over.

The advantages of this five-deep brood frame hive are:

1. The hive is made from economical and available materials.
2. Few tools are needed to build it.
3. The hive is made from materials light in weight, making it easy to transport.
4. The hive can be used in rearing queens, making increase, and requeening colonies.
5. One five-frame hive is needed for each 10 colonies to keep extra queens for requeening.
6. It is an excellent hive for beginners to learn how to handle bees.

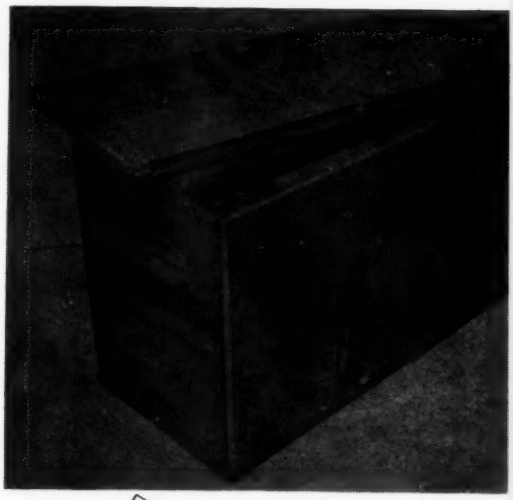
The Western apple boxes usually come without tops. After the ends are cut, place two deep brood frames between them as a gauge to determine the proper space for the frames. This is necessary as the sides of the apple box are a little short on length.

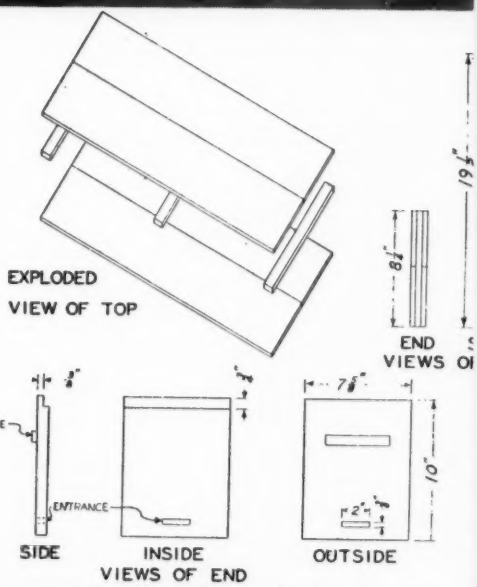
A saw, hammer, square, brace and bit, and wood vise are practically all the tools needed to build the hive. If a table saw is available the work can be greatly speeded up when sawing out the ends of the hive.

The hive, made from apple boxes, is light in weight and easily transported. This white pine material takes wood preservative readily, thus giving it very long life. About four ounces of a well-recommended wood preservative brushed on the hive will make it last for years.

Uses of the Hive

The hive is well suited to queen rearing and queens can be wintered in this small hive. Some queen breeders sell these over-wintered queens before it is possible to raise queens in the spring. These over-wintered queens have not had the opportunity to lay very much in the small hive through winter and are considered excellent for requeening colonies early in the spring before young queens are normally available.





The beekeeper can take these five-frame hives to his apiary and remove brood frames in colonies that are becoming crowded and might swarm. The hives are given a queen cell or a laying queen. When the five-frame colonies become strong the bees and combs can be transferred to a regular standard hive.

(Continued on page 574)

Editorials

Price Support of Honey Assured

THE NEW FARM BILL agreed upon by Congress in conference between the Senate and the House in late August, assures that honey will be retained under price support during the next marketing season or until the act is changed again by Congress at 60% to 90% of parity (assuming the President signs the bill).

Back in January, Secretary of Agriculture Benson had requested that Congress remove honey from the mandatory list of farm crops and place it under the permissive list. This meant in effect that honey would be removed from price support as soon as the new bill became effective. The industry in session at the national meeting at Baltimore, Maryland, felt that price support had stabilized the honey market without undue cost to the government, and requested that the Honey Industry Council of America and the American Beekeeping Federation work jointly in arranging a hearing for the industry before the Agricultural Committees of the two Houses of Congress.

The meeting was arranged and in March a team consisting of the following men appeared at two-hour hearings in each branch of Congress: Alan Root, Chairman of the Honey Industry Council of America; Henry Schaefer, President of the American Beekeeping Federation; Walter Sagunsky, a representative of the Federation; Chris Jensen, a representative of the Bee Breeders' Association; R. B. Willson, a representative of the American Honey Packers' and Dealers' Association; Roland Stone, a representative of the California Honey Packers' Association; and Roy Grout, past President of the American Beekeeping Federation. The statement presented by these men was carefully planned weeks in advance and evidently the arguments used were accepted by Congress for the mandatory feature is incorporated in the Act. Mrs. Laura Shepard of California also appeared as a witness at the hearings representing a group of western beekeepers.

One of the promises the Committee made to the two branches of Congress was that the industry was working on a "self-help" program which if conscientiously followed by the producer and the packer, would eventually make price support unnecessary and give a permanent cure to many of the industry's marketing problems. See "Birth of a Great Idea", August Gleanings, page 482.

The industry has an obligation to do something for itself on a larger scale than in the past. See "How to Help Yourself", page 564.

The Weather — a Good Alibi

THE WEATHER conditions do come in for considerable discussion these days by beekeepers, and perhaps rightly so. Last spring in this area we had an excessive amount of rain and cool weather which prevented bees from visiting blossoms which were available. Consequently, bees ran short of stores and it was necessary to feed sugar to keep them alive.

Following this wet spell we had a short period of good weather during which the bees stored some surplus. The weather in this area then turned hot and dry, and these conditions prevented bees from storing a normal crop of white

honey. Beekeepers in localities where fall honey plants abound may yet secure a crop.

During seasons when unusually large crops of honey were secured, the weather cooperated with beekeepers, rains came periodically at the right time to stimulate favorable development of honey plants and nectar secretion.

Some seem to think that in the future man will be able to regulate weather conditions. Perhaps so, but even if this were possible, it would be difficult to please everybody. The General Manager is still in control of our universe, and even though beekeepers may, at times, experience a season unfavorable for securing a good crop, they have to continue, hoping for a more favorable season next year. Most beekeepers are optimists.

From reports received, it would seem that some sections of the country have been favored with a fairly good crop of white honey. Within the past few days we heard from a beekeeper in a near-by state who says that he is securing the best honey crop in his lifetime.

When a beekeeper fails to get a good crop, he has to have an alibi. He can blame his failure on the weather.

Roadside Honey Stands

SOME ROADSIDE honey stands are attractive and clean, and others unattractive. Obviously, the tourist interested in purchasing honey will stop at the stand that is most inviting.

There should be at least one, or perhaps two, approach signs, about one mile or a half-mile from the honey stand, to let the driver of the automobile know that he is coming to a stand where honey is sold.

This stand should be far enough away from the road to permit cars to turn off and park while occupants are purchasing honey. There should be a fairly large sign with the word, HONEY, standing out prominently, then, in smaller letters, a phrase such as NATURE'S HEALTHFUL SWEET.

Some operators of roadside stands have an observation hive of bees placed in a suitable spot where bees can fly in and out. It seems essential that someone attending the stand should know enough about bees to intelligently answer the 101 questions which are likely to be asked.

It is important to have properly processed honey in clean, attractive containers with labels that have eye appeal. Section comb honey should be in cartons. People who operate the stands should also be cleanly dressed, and courteous.

We need more roadside honey stands throughout the country to bring our product to the attention of travelers who might not otherwise see it. Attractive stands are a help to the beekeeping industry because they promote consumer interest in honey.

Operation Honey-Week

TO MAKE THIS YEAR'S National Honey Week a big success we must make our plans now. Local beekeeping organizations should develop their own promotional program and then make their plans known to the American Beekeeping Federation. Each group should choose a marketing committee chairman and send his name to Mr. Robert Banker, Secretary, American Beekeeping Federation, Cannon Falls, Minnesota.

Association displays at fairs can bring a lot of publicity, especially if the food value of honey as well as pollination is stressed. Beekeeping talks, accompanied by either the Texaco or California Honey Advisory Board films, are a valuable asset to the industry. These talks build good will besides promoting honey and pollination.

It is important that every beekeeping association, regardless of size, participate in the 1954 National Honey Week program. We need advertising at the "ground roots" level and only a local beekeeping association can successfully do this. But don't waste time—**now** is the time to act. Get promotional literature from the American Honey Institute and be ready for "Operation Honey-week".

Uniting bees in an observation hive

by FRANK STRANZL, San Francisco, California

IN ORDER to conduct continuous experiments in the observation hive it often becomes necessary to add more bees to a small colony. In building my first observation hive I made no provision for the uniting of bees other than through the newspaper method.

In my first experiment, using bees of Italian stock, I placed a sheet of newspaper with the usual perforations between the upper and lower hives. In placing the upper hive into position, I evidently must have moved the paper off one edge which enabled the bees from the lower hive to move up and annihilate the frame of bees in the upper story which I intended to unite with the lower occupants.

In this fight every single bee from the lower hive seemed to participate. As the terrific fight progressed I failed to see what the queen was doing. In less than five minutes there was not a single bee that I had intended to introduce into the lower hive left. This of course was a man-made invasion.

The bees in the upper frame did not anticipate their predicament—nor did I. The original possessors were furious and rushed up in unbelievable frenzy.

No bee was marked and I could not tell which side was winning or losing the battle. After the combat was over I had to remove the dead bees which were lying one inch deep over the bottom of the hive and blocked the entrance. Having won their battle, the original occupants of the lower hive continued with their regular work. This episode made me curious as to how long the bees would be fighting mad at each other while uniting.

New Hive Planned

I now planned and constructed a new observation hive. The top and bottom bars of this hive were made with grooves which permitted me to insert a perforated plastic glass slide. I now transferred the bees to their new hive and left them alone for a few days. This I did to be sure they were well established before starting any new experiment.

I placed the perforated plastic glass slide between the hives and a frame full of bees in the top hive. A fierce commotion resulted. The bees, unable to grab each other, piled on the top and bottom of the plastic slide looking through the holes — perhaps calling each other names. The queen, greatly excited, was running all over the bottom frame. It was not more than ten or fifteen minutes before some of the bees from the bottom frame went back to cover the brood. The upper frame of bees came from a queenless colony, had no brood, but little pollen, and only a small quantity of honey.

After half an hour the slide was moved far enough back to permit two bees to pass through at a time. As the first one attempted to descend from the upper frame to the lower one, she was not greeted with kid gloves. She immediately crumbled and dropped to the bottom. After this performance was repeated a few times I was convinced that the time for uniting was not yet at hand.

Every half hour from then on I repeated the same performance with similar results. After a period of two hours the fighting instinct seemed to have diminished. More and more bees from below the slide went back to work, a few already feeding the queen. However a number of bees were still clustered on the top and bottom of the slides—p e r h a p s deciding on peace terms.

Two and a half hours after the opening process, the slide was moved back the same distance as the original experiment. A few bees descended to the lower hive. Although the killing instinct was gone there still appeared to be ill feeling, as some lower frame bees would continually dive at their visitors from the upper frame. After three hours had elapsed I slowly removed the slide inch by inch until completely out. There was no sign of disagreement now.

This entire experiment has been repeated a number of times and my conclusion is that in a small hive the time element and the b e h a v i o r is always the same.

The question still remains as to what medium the bees use in establishing mutual relations.

Come on over

by Mrs. BENJ. NIELSEN
Aurora, Nebraska

Try these footballs on the gang when they come over after the game.—Photo Courtesy Kellogg Co.

AFTER THE football game on a nippy night, it's fun to say, "Come on over to the house" and have a jam session, celebrating victory or bemoaning loss. Appetites are whetted, and how good hamburgers taste, whether broiled inside or on the grill outside.

Some honeyed hamburger sauce, piping hot honey sweetened chocolate, nothing like it to take the chill out of the old bones! Makes the players forget some of their bruises and sore muscles, too!

Pass a plate of these cunning crunchy footballs, illustrated in the accompanying photo, or give them the place of honor on buffet or table, depending on how you are serving.

With hamburgers molded, sauce in the refrigerator and chocolate concentrate awaiting, footballs made well in advance, there's no strain at all, just relax and enjoy yourself. Be ready to pass the recipes along. And, good eating to you!

Footballs

Two cups semi-sweet chocolate pieces, ⅔ cup honey, and 5 cups oven-popped rice cereal.

Melt chocolate over hot but not boiling water; stir in honey. Remove from heat. Add cereal, mixing thoroughly. Cool slightly. Shape into footballs. Make lacing pattern with confectioners' sugar icing. Yield: about 20 footballs.

Honey Hamburger Sauce

One-fourth cup salad oil, 1 cup minced onion, 1 clove chopped garlic, 1 cup honey, ½ cup Worcestershire sauce, 1 cup catsup, 1 cup wine vinegar, 1½ teaspoons salt, 1 tablespoon dry mustard, 1 teaspoon oregano, 1 teaspoon pepper, and ½ teaspoon thyme.

Cook onion and garlic in the salad oil until tender. Add remaining ingredients and bring to boil, stirring constantly. Simmer five minutes. May be stored in refrigerator. Makes two pints.

Honey Chocolate

Grate 1½ ounces unsweetened chocolate; add ½ cup water and cook over low heat until thick, stirring constantly. Add ⅔ cup honey and ½ teaspoon salt. Simmer three minutes. Fold in ½ cup cream, whipped. Store in refrigerator. To use, place 1 tablespoon in cup and fill with hot milk; stir well and serve.

B & Z Library

Let's talk about honey plants

by HARVEY B. LOVELL, University of Louisville

JAPANESE Pagoda Tree **(Sophora Japonica)** is blooming riotously on the campus of the University of Louisville. The tree is completely covered with large clusters of pale-yellow, pea-shaped flowers and bees are working them continuously. The tree starts blooming in early July and blooms up into September, although it is at its best in late July and early August.

An unusual feature of bee activity on the pagoda tree is that bees work the fallen flowers almost as actively as they do the ones on the trees. The ground under the tree is a mat of old flowers among which honey bees crawl until they find a fairly fresh one which they visit. Bees spend considerable time on each flower both on the tree and on the ground. I caught and squeezed several bees and found large drops of nectar in their honey stomachs.

Since this tree blooms during a period when honey plants are unusually scarce, it should be planted more extensively around bee yards.

Montana. According to Lloyd Bushby, Russian knapweed **(Centaurea repens)** is a heavy yield in wet falls. It grows in dry, submarginal ground. He obtains from 25 to 50 pounds surplus of white honey with a strong flavor. Knapweed is a close relative of star thistles of California, which also belong to the genus **Centaurea.**

Idaho. Mr. Bushby writes of an interesting experience he had moving bees into a high mountain valley 5000 feet above sea level. The winters were so terrible that he moved in for only a few weeks during the summer.

"On one occasion", he recalls, "we were in there with our load of bees on July 3. When we woke up next morning, our sleeping bags were stiff and white with frost. The fields of clover, which had just started to bloom, were lying flat, apparently destroyed. We decided to leave the bees there anyway and put on what supers we had. We came back eight days later and got a real surprise. The hives were all full and the bees were hanging on the outside. The clover buds underneath had not been injured by the frost and came out fast during those eight warm days—the honey was really rolling in, and we produced a bumper crop."

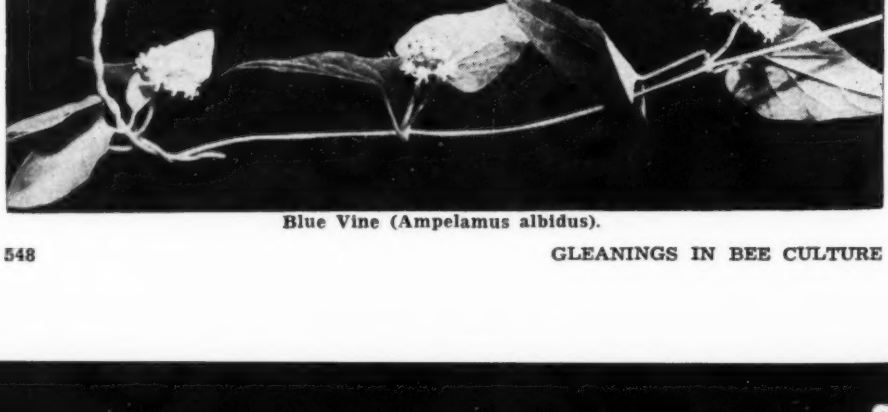
I might add that it is surprises like this that keep many men in beekeeping.

California. In a recent letter George J. Brown of Fresno writes that he sometimes gets up to a 200-pound surplus from wild buckwheat **(Eriogonum** spp.) with his average around 30 pounds. He describes the flavor as "good, very distinctive" with a "strong floral smell." He adds that it "will produce every year if rains are normal, but it is better every other year."

Although wild buckwheat belongs to the same family as the cultivated buckwheat and heart's-ease, its honey lacks the strong flavor that makes honey from all the other plants in the buckwheat family hard to sell. I have a sample of wild buckwheat honey packed by E. H. Buck, South Laguna, which I find has a pleasant flavor and a light amber color.

Indiana. Blue vine **(Ampelamus albidus)** used to be a major honey

(Continued on page 572)



Blue Vine (Ampelamus albidus).

Bee Facts

(A Digest of Scientific Research)

Treatment for Multiple Bee Stings

BEE STINGS seldom cause death except with previous sensitization. However, when extreme systemic reactions occur, the need for prompt treatment cannot be overemphasized.

Epinephrine (**Adrenalin**) in doses of 0.6 to 0.8 cc. of a 1:1,000 solution should be injected subcutaneously at once, and the stingers removed. Stingers should not be pulled out but are brushed off in the direction opposite to their entry. If feasible, a tourniquet should be placed above the sting site.

The patient's blood pressure must be determined at short intervals. Nearly normal blood pressure is a sign of adequate epinephrine effect and beginning recovery. Another injection of epinephrine should be given when the blood pressure is persistently low or falling. If all else fails, 0.2 to 0.3 cc. of the epinephrine solution diluted to 10 cc. with sterile isotonic saline solution or the patient's own blood may be slowly injected intravenously, with due regard for contraindications and careful observation for cardiac arrhythmias.

The patient should be hospitalized as quickly as possible; intravenous infusions of irradiated human plasma are given. If edema of the glottis threatens, tracheotomy should be deferred. For asthmatic findings, intravenous aminophylline may be required.

Reference: Modern Medicine of Canada. Vol. 9:37. Questions & Answers. May 1954.

Is Bee-collected Pollen Viable?

MR. A. F. REBERT refers to several investigations proving that pollen, following its collection by bees, has lost its ability to germinate and fecundate.

This scientist suggests that the bee may add some inhibitory substance to the pollen. He extracted pollen masses collected in a trap with various solvents and also extracted whole bees, venom, salivary glands, royal jelly, and dialyzed honey. These extracts were then tested for their ability to inhibit growth of wheat seedling or of natural or colchicine tumors.

Collected pollen extracts, whole bee extracts, and honey dialysate inhibited plant growth markedly, but bee venom was inconstant.

Various pure chemicals were then tested, such as organic acids, choline, glycerol and tryptophane, which were inactive. Vitamins E and K, and inositol showed definite activity as growth inhibitors.

Reference: Bebert, A. F. Action de Divers Constituants Chimiquement Definis du Miel et des Extraits D'Abeille Sur Des Cellules Colchicinees du Ble. Rev. Path. Gen. Comp. 53:1085. Oct. 1953.

How Effective is Laughing Gas?

FULLY CONTROLLED experiments by C. R. Ribbands of Englands' Rothamsted Experimental Station showed that anaesthesia with either ammonium nitrate fumes or nitrous oxide (both commonly known as laughing gas) does not affect the memory of honey bees. After carbon dioxide anaesthesia more bees returned to their original home.

Carbon dioxide anaesthesia has been found to encourage honey bees to forsake hive duties for foraging activities at an earlier age than untreated bees.

It was found that "the effective anaesthetizing agent in ammonium nitrate fumes was not nitrous oxide, but cyanide or perhaps cyanogens. This explained why the fume treatment was sometimes lethal. However, in other respects the effects of the two treatments were similar, e.g., both inhibited pollen gathering."

Reference: Ribbands, C. R. Nitrous Oxide Anaesthesia Does Not Encourage Re-Oreintation of Honey bees. Bee World. Vol. 35, No. 5. Pp. 91-95. May 1954.

FROM Foreign LANDS

Bees and Stamps

STAMP COLLECTORS could make their stamp collection so much more interesting if they would not divide their stamps by countries but by subject matter, says W. H. Wolff of Germany. These collector's items will seem more like picture books than cut and dry collections and would become interesting even to a layman.

There are for example many stamps showing bees, hives and the use of wax which heretofore have gone unnoticed because they are being separated under different countries throughout the album.

Take for instance a Ct. 30 Bulgarian stamp on which a beekeeper is shown opening one of his unusually built hives, another Ct. 15 stamp of the same country shows a hive with a pointed straw roof which reminds one of native huts found in Africa, or a Belgium 1F75 stamp picturing an early skep hive.

Bees have always been set as an example of thrift and willingness to work. Therefore countries honoring banks on their stamps often picture bees and their hives, to name but a few are Belgium, Finland and Sweden. Even Napoleon I honored the thrifty bee by embroidering it on his flags.

On a Dutch 2 and 3C stamp a child is shown unaware of a bee's stinger, reaching for it, while a second one flies off.

A 3 Din Trieste stamp pictures three bees on a honeycomb background.

Austria and the Netherlands issued stamps showing flowers, something synonymous with bees. In fact several countries, the Netherlands, Austra, Hungary, and Switzerland issued whole flower series. Japan has a stamp showing their flowering trees, Brazil pictures botanical gardens and Germany floral exhibits.

Of all the ways countries honor honey bees, let us not forget a 10 cent Borneo stamp showing a bear raiding a wild bee hive for honey.

Italy, Austria and Belgium show different kinds of candles on their stamps, as to this day candles are still being made of beeswax.

Let us be more observant from now on when we look at our stamps; surely there are many more showing our little friends than mentioned here. How much bees have become a part of our life is shown by the fact that to this day, we call the first few weeks after the wedding the "honeymoon".

Suedwestdeutscher Imker, November 1953.

Shape of Feeder Can Stimulates Syrup Intake

DR. KOPPEL of the Zoological Institute, Graz, Austria, tested, upon the suggestion of Dr. Karl von Frisch, the question whether bees prefer sugar syrup from narrow slots or from an open container.

It was found that after drinking syrup from narrow slots, nectar scouts will dance a livelier dance in the hive than one that drank from an open container. Bees that drank out of a slot seem to be more stimulated to collect, and remain in the hive a shorter period even after a longer dance than the ones that drank out of an open container. Bees drinking from narrow slits also drink longer and more.

Slit:		
duration of dance		25.7 sec.
pause in hive	1 min.	58 sec.
contents of honey stomach		69.7 mg.
Open Container:		
duration of dance		19.6 sec.
pause in hive	2 min.	29 sec.
contents of honey stomach		62.9 mg.

The longer drink from the slot which is more like natural conditions therefore stimulates bees to a longer dance, although the sugar content of the syrup had to be high as weakened syrup was not even accepted from a slot. The quality of the syrup in both cases had to be the same.

Zeitschrift f. vergleichende Physiologie. 1953.

Live and Learn

By Propolis Pete

SEPTEMBER IS a heck of a time to be talking about swarming, but while it is fresh in my mind, let's get it off.

This year gave every indication that it was going to be a corker for swarms. The bees built up to great strength and then the wet and cold came along and kept them in their hives. The first three or four that started cells were treated in a way that I was sure would lick the problem for me. Then came the year's surprise.

Now this brain child of my genius was supposed to simplify the control of swarming to the point that nobody ever was going to have such troubles in the future. The system was to go along in the regular way until the bees began those cute little cups that they always start when they begin to commence to think about getting out of where they are.

First of all, of course, the two bodies were reversed early in the season. The queen invariably moved upstairs and when they started those little cups, the trick was to slip a shallow super in between the two brood bodies. Maybe a deep body would do the trick too, but the thought was that it might give them too big a gap between the upper and lower bodies, and aggravate the situation insead of helping it. Then, when the bees had that shallow body well filled, put the two regular hive bodies together again, with the shallow super on the top of the pile, and another shallow between the top bodies.

Apparently this worked like a charm, because the bees did not make any attempt to swarm. The catch was that none of the other colonies that were not treated made any attempt to swarm either. So, was it the "control" or the season that was responsible for the fact that I had only two swarms come out this year? And those two had extraordinary reasons for coming out.

After a while I got the idea that I would try something else. I put a couple of weak sisters together, to make a humdinger for crowding. They stayed just the way I put them without even trying to fix things up for themselves. Even my observation hive was deliberately built up to the point that you just couldn't get another bee into it, and they didn't swarm. That is, they didn't swarm until there was nothing left for them to do.

Things got so bad that they finally came out and hung themselves up on a tree. Then they built a couple of supersedure cells in the observation hive, and at this writing they are waiting for the virgins to emerge and mate. The bees that came out are still hanging. I don't know what they are going to do. The cluster is only about the size of a pint measure, and at this late date they haven't a chance to build up for the winter.

THE TWO SWARMS that I speak of had funny things the matter with them too. The first one hung so high up that I couldn't even reach them with a rock. The cluster was so big though, that it broke the branch and they came down kerplump. When they went back they were just as high. They shifted their position at least four times during the week that they hung there, never low enough to reach them. Finally they departed for points west. I'll probably hear of them next when someone comes in to ask me to get some bees out of their walls.

The second of these swarms was given to a beekeeper friend whose bees had conked out during the winter. The last I saw them they had five frames full of honey, and four frames with the nicest assortment of drone brood from laying workers imaginable.

In past years I have had swarms come in from the outside and take possession of empty hives or supers that were just setting around waiting to be used. A couple of years ago I fixed up an old keg out in the woods, a jumbo hive for which I had no use in my regular line, and a box hive de luxe that I made up one winter for the fun of it. Ever since then I haven't had a single swarm.

The keg and box hive are spiked with some old comb that I thought the scout bees would smell out, and the jumbo hive has a couple of sheets of foundation in it to give them a start if they want to set up housekeeping. But so far no luck. I guess that it is just another case of the bees being contrary.

From the Field of Experience

Honey Bus

by SAMUEL M. SMITH, Enterprise, Florida

SOME MONTHS BACK, I got to wondering why I should go to all the work of loading supers of honey on my truck, hauling it to the honey house (a task often requiring a full day), then after finishing the extracting, load the empties back on the truck and haul them back. That meant two round trips (four one-way trips), probably two days lost in transportation, as well as the time in the extraction process. This time is lost to the bees (especially in a honey flow this costs money) and they may have started crowding the queen's laying space and causing the bees to ready for swarming. Besides this, the added trips mean added gasoline bills.

Why not work out a system so that the extracting plant could be moved to the bee yards? I had read an article about a man in California who had fixed up a bus for such a plant, but his plant was not a completely self-contained unit in that it had no place for honey storage and had too small a capacity for what I wanted.

I found a 1938 white COE style bus which had a 1951 Hercules motor and was in A-1 working condition. It had been used as a house by the former owner and had a butane tank bracket already fixed on the back door and a two-burner gas stove as well as a couch and some unusable things things thrown in. The ceiling was too low to allow standing up but after estimating the approximate position I would be in while working, I found that I almost never would be wanting to stand straight anyway (this has since been proved in action).

I prefer the cab-over-engine style bus to the conventional engine ahead style since the driver can see the ground four feet in front of the bus from a normal position and can lean forward (still in position to drive) and see less than a foot ahead. This COE style has less length overall than a conventional bus with the same floor space and is therefore easier to handle on sharp turns and back woods roads.

The cost of the bus was $550 and the equipment was $300 plus not counting the equipment I already had which amounted to about $100 more. The labor bill brought the total close to $2000.

The honey bus.

For those readers who are planning to build or are building a new honey house, you might find that the bus system is cheaper. Firstly, where can you find a building nearly 30 feet long and nearly eight feet wide for $500 or $550?

How much do you pay in taxes on your honey house each year? I pay only $25.25 per year for a license tag which is the only tax on it and I'll bet you pay a lot more than that yearly on any honey house. The reason for the cheap tag on the bus is that it has installed equipment which prevents its use for any other purpose. The tag for that weight vehicle would cost $95.00 if not so equipped.

So much for tax and overall cost advantages. The windows are screened and there are bee-proof vents in the roof. For Florida weather this is generally plenty of ventilation, though an exhaust fan might be installed for use in states where hot summers are the general rule. The fan could easily be powered by the Briggs Stratton.

There are nine openable side windows in the bus and of that number, seven are screened with single thickness screening and the windows can easily be closed from the inside in case of a sudden rain.

The steam system is heated by a butane stove under an eight-gallon steam boiler. A 20-pound butane tank holds enough gas for two days and a refill costs $2.10.

Uncapping System

ON AN AVERAGE day, one hired man and myself will be ready to leave the home place at about 9:15 A.M. to go to the bee yard and arrive there about 11 or 11:30. I go at once to the hives and remove about nine supers which is the number that can usually be extracted by lunch time. These are loaded into the bus. As soon as the first super enters the bus, the hired man is ready to begin uncapping (the stove was lit en route), and as soon as the last of the nine is aboard he will be ready for the first extractor load to be started. I start the extractor and then start shaking the bees from the comb and place them on the front of the capping melter where he can easily grab them to uncap.

I use neither escape boards nor acid boards but bring the supers into the bus with most of the bees still in them. This method saves time, and, because of the speed of our method, it does not cause robbing. Only about nine to a dozen supers are brought in at a time. The uncapping speed is limited only by the speed the operator can uncap with a steam knife.

The system is basically the same as might be used in a honey house using a single 30-frame extractor. The honey is extracted, strained, and bottled right inside. A steam heated capping melter is used in preference to capping drier, wax press, or any other system since the honey quality is not impaired and the honey, wax, and slumgum are all separated in a minimum length of time.

I do not use any type of heating arrangement for the honey, though a tubing type flash heater could easily be rigged up.

I have listened to many arguments both for and against the bus system and the arguments against the system may have their points, but the bus system will prove its worth. For instance: A man told me that the bees would be bad about robbing, especially if no honey flow was on at the time. No idea could be more wrong. Despite the fact that there are several places the bees use to escape, I have yet to see any bees try to enter and the bees are not bad about passing honey through the screen as many beekeepers suggested they might do.

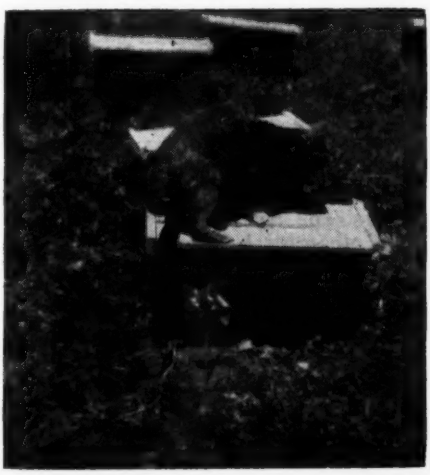
An advantage other than economy is that of disease control. By returning the combs to the same bees they were removed from and remaining in the same yard, the spread of disease can be kept at a minimum.

It's an Idea

by Milton Stricker, Annandale, N. J.

QUEEN BREEDERS in New Jersey have found that moles are undermining their nucs and in some cases, dumping them. A simple way to eliminate them is by putting a toy pinwheel in the runs. The wind blows the pinwheel, sending vibrations down the stick throughout the burrow and the moles leave. Of course, it does not kill the moles, but it chases them over to your neighbors.

Sounds silly, doesn't it, but it works.



The mole repellant in operation.

Beekeeping in Paradise

by GRAVES A. ADKINS, Paradise, California

HERE IN Paradise, California, where I live at about 2,000 foot elevation, we have a wonderful climate and range for bees.

I started beekeeping about a year ago, having been interested in bees for some time. I bought a few colonies, c a u g h t a few swarms, and so got started.

In this section we have a good manzanita flow starting the last of January and lasting about three weeks; moving up the ridge as s p r i n g progresses. One can follow up and have a fair honey flow up to about the first of June. Sounds good but here is the sticker. The early flow comes in the rainy season, and two years out of three the bees can't fly to get the nectar.

After June the star thistle in the valleys is good, not so much for quantity but for quality, which rates with the best. Star thistle lasts till the freeze which is often as late as December first.

Now, as I have shown, by doing a little moving about one can keep the bees working about ten months out of the year, all of which is very good as far as it goes.

Now, let's take a look at the other side of the picture. As I said before, the early manzanita usually comes on at a rainy time of the year, so no honey. The later crops higher in the hills are in the heart of bear country and what a bear can't do to a bee yard is not worth doing. So you put up an electric fence or no bees. Sometimes the electric fence fails to stop the bear.

If you have survived these handicaps till June or a little later, you can move back to the valley for thistle, providing you can find a place to set down. The bee men are falling over each other for bee range.

The California thistle is definitely a noxious weed. A good per cent of the star thistle blooms in the stubble fields after the grain harvest. This year I see many of the farmers spraying their grain fields with 2-4-D to kill the thistle. Roadways and fence rows are also being sprayed to kill all the vegetable growth. These are also places where star thistle grows abundantly. The clean-up looks very good from the farmer's point of view, but means thousands of pounds less honey for the beekeeper.

The pollinating business has had rather wide publicity with the result that farmers are shopping for pollinators, and finding bargains galore.

I heard of one b e e k e e p e r who moved into the almonds for 75 cents a colony. When I ask $3.00 per colony for pollinating apples, I am told by the ranchers that they can get this service for $1.00 to $1.50 per colony. I am told by one beekeeper that he moves into the pears for $2.00 per colony because the orchards will take all of his bees. This means a move of from 50 to 150 miles with his bees.

Now the smaller ranchers read in the farm magazines and journals that beekeepers are getting $5.00 or more for pollinating plus his honey. So why pay this fee when he could just as well own a few colonies, do his own pollinating, and have some honey besides. Consequently, there are hundreds of colonies being bought and built up around the country that are not cared for after the first few stings and are never reported to the bee inspector.

These colonies are left to swarm and build in trees, houses, rocks or wherever they can find a place. Some starve to death, others die of disease. With only one bee inspector in the county, it would be impossible for him to find and inspect all the bees even if they were reported to him, which they are not.

Now what is to happen to the bee men when disease gets going in these unregistered colonies and wild bees that cannot be found or got at for inspection? Will beekeeping be a thing of the past or will beekeepers quit fighting among themselves and organize and advertise for their mutual protection?

Our Cover Picture

WELL, I'LL BEE SWITCHED—George Wallace, a Wabash railroad switch tender, found his job doubly difficult because of a swarm of bees which nearly covered this manually operated switch. — Photo from Wide World Photos.

Cornell University Reports on Royal Jelly

IN RECENT weeks several articles have appeared describing the alleged values of royal jelley (a glandular secretion of young nurse bees) for human uses—in medicine, as an ingredient in cosmetics, and the like. It has been stated that royal jelley will do many things, from restoring important ingredients to the skin to curing certain diseases.

Contrary to published reports, **Cornell University has carried on no research concerning the effects of royal jelly when used by humans.** The general lack of knowledge concerning the substance, however, has prompted a group of Cornell scientists from three departments to undertake an informal program of exploratory research.

Laboratory research on royal jelly using animals and insects has been conducted at various places for many years, but as far as Cornell scientists know there has been no reliable, conclusive research on the effects of the product on human beings.

An apiary of about 40 colonies has been set aside at Cornell for the production of royal jelly and experiments are under way to determine the best method for obtaining the maximum amount per colony. Royal jelly is collected daily and refrigerated to prevent its deterioration. When a sufficient quantity has been collected it will be divided among interested research workers and preliminary experiments will be started in several fields.

It is anticipated that progress will be slow. As significant information becomes available it will be released without delay.

Prof. E. J. Dyce of Cornell's entomology department describes royal jelly as a glandular secretion of young nurse bees. It is fed to queen bees during their entire lifetime and to worker bees for about the first two and one-half days of their larval development.

Queen bees develop from female larvae raised on royal jelly. It is common practice for beekeepers to raise queens from young worker larvae by transferring them to larger queen cells placed in queenless colonies. Bees in queenless colonies provide the young worker larvae with royal jelly. These larvae then develop into queens.

Webster to Join Sioux Co-op.

Announcement has been made by the Sioux Honey Association that effective September 1, Mr. Marvin Webster, Washington, D. C., will become Manager of its Bulk Honey and Export Sales Division with headquarters in Anaheim, California.

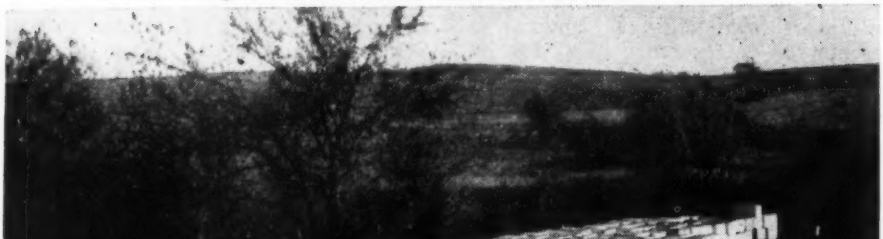
Mr. Webster was graduated from the Ontario Agricultural College at Guelph, Ontario, Canada, in 1940, after which he joined the staff of the Ontario Agricultural College and worked under the direction of Dr. E. J. Dyce and Professor G. F. Townsend.

In 1948, Mr. Webster joined Finger Lakes Honey Producers at Groton, N. Y., becoming General Manager of that organization. Then in 1950 he joined the staff of the United States Department of Agriculture to assist in the carrying out of honey export and price support programs, a position he has now left to join the Sioux Honey Association.

"George always makes the best of a bad situation. His colonies are diseased with AFB."

Storing Supers and Honey in Outyards

by C. M. ISAACSON, Thief River Falls, Minn.



Some beekeepers stack supers in one place to allow the bees to clean them. Then they are moved to outyards.—Photo by L. F. Baxter, Blair, Nebraska.

THERE ARE MANY seemingly small things a beekeeper can do to make the sum total of his work easier and less in quantity. Among these is the practice of hauling supers back to the yards after extracting is over, and stacking them properly protected on platforms for use the following year.

With some care during extracting, supers can be taken back to their respective yard locations if desired; a good idea if one has reason to fear disease. Then, too, this hauling back can save time and trouble the following season—the supers are already there and one can always walk in if roads are soft.

What is required is a good mouse-tight platform (creosoted well if it is to last)—preferably several inches off the ground. It does no harm if bees get into the supers through **very small** openings. Shingle covers are excellent to cover the super stacks (nailing them down to prevent blowing off, of course). All piles should be placed closely together on the platform.

CAUTION. Unless the apiary is well protected from wind, lath the pile together well for many combs can be broken if a winter storm blows things around. Also, with so much equipment in one place, make sure your location is protected from grass fires, which may come in fall or early spring.

Right along with this super pile idea is the one of leaving a number of full supers of honey piled in the yard for early spring feeding. There always seem to be a few colonies that use unusual amounts, and which often starve before roads open enough to drive in with feed. It is not hard to walk into a yard if one does not need to lug in sugar or other feed, however.

Pile up your feed—honey-bee tight. Wrap the pile with asphalt paper if you wish to be extra careful—and you will be quite happy over your foresight when spring comes again.

Unless one has a good fall honey flow, or crowds the bees somewhat towards the end of the main flow, there always are a number of otherwise good colonies too light to winter. There are several ways to remedy this:

1. Feed sugar syrup (messy, time consuming, and hard on the bees).
2. Fill in sufficient combs of honey (good, but also takes time).
3. Leave partly filled supers above an inner cover for the honey to be carried below (you must scratch cappings on sealed honey).
4. Leave a well-filled shallow or medium-depth super on top of the regular double hive body arrangement for it is a quick and safe way of insuring enough honey. Later on, the bottom hive body may either be removed or left for over winter as desired. There usually will be very little honey left in it, however.

Getting Bees to Carry Honey from the Super to the Brood Chamber

by JOSEPH RUEL, Fifty Lakes, Minnesota

IN ADDITION to what the bees have in the brood chamber, there was enough honey scattered throughout the supers in the fall to winter the bees very nicely. But how was I to get the honey into the brood chamber without extracting it and then feeding it back to them again?

I tried to feed it back to them again by putting one super at a time over a honey board with the bee escape hole left open. The bees only clustered partly on the combs in the super directly over the bee escape hole while the rest of the bees stayed below.

I guess they were very slowly, too slowly, transferring the honey down below. At this rate cold weather would put a stop to that and make a mess of things in general, for it was in October. In order to hurry the bees to carry the honey down below more quickly I removed four or five frames, those with little or no honey in them, and spread the rest of the frames of honey as far apart as the super would allow by spacing them one inch or more apart, depending on how many frames were left in the super.

Well, that worked a whole lot better and faster, for in a day or two the super was entirely free of honey as they had carried it all below.

Here in northern Minnesota I winter outside in hives of the Jumbo size and only one story at that. My bees store good crops, even up to 300 pounds, but when fall comes, they fill only one story hive for wintering when the supers are removed. To winter in double brood chambers would only give them more space to keep warm. As the Jumbo hives, or larger, hold plenty of honey for wintering, I see no reason for compelling them to heat more space, that is, here in northern Minnesota which is 32 miles north of Brainerd, Minnesota.

NATIONAL HONEY WEEK PROMOTION. S. K. Hampton of Salt Lake City, Utah, promoted National Honey Week in 1953 with good displays like the one above.

B & L Library

My Roadside Honey Sales

by O. S. COX, Shelley, Idaho

IN 1949, WE modernized our honey stand with an extended roof, similar to a service station, which protects cars and customers from rain during their stop at our stand. We operate by bell service. Each summer we put two observation hives of bees in the window and have the following signs the year around as the pictures reveal:

First sign, approaching from the South, reads in Scotch letters, "You're in a Bee Line (picture of a bee) for Cox Honey Farms, One Mile." Next sign, "For Goodness Sake, Eat Honey." This is followed by, "Slow Down, Your Honey is 1200 Feet Away." The sign above our honey stand reads, "Honey for Sale, Best in the West, Cox Honey Farms", (From Producer to Consumer). We have just put up another sign which says "Have You Tried Cox's Creamed Honey?"

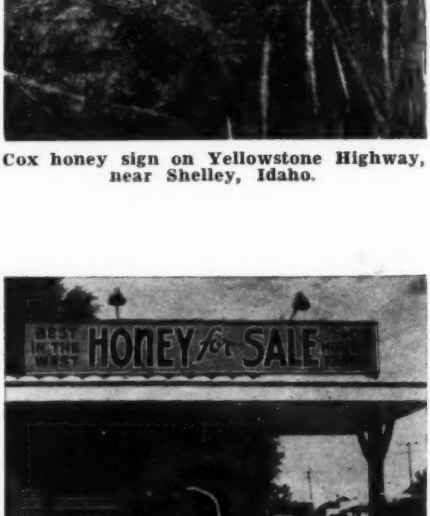
Cox's honey stand has been a widely known marker on the Yellowstone Highway for years and tourists from all over the Nation stop and purchase our sweets, either in the comb, extracted in pails, or creamed. Our tourist season lasts only about four months out of the year, but if we had it the year around, we probably could sell three times more, or probably most of our crop.

Cox honey sign on Yellowstone Highway, near Shelley, Idaho.

A Word About Our Creamed Honey

I have my own formula that was developed eight years ago. Nothing like it is made anywhere and many tourists say, "It's the best we have ever tasted. There's none like it."

Several at the National Beekeepers' Convention held in Dallas, Texas, said, "It's the whitest and best we have ever tasted." Of the three forms of honey we sell, creamed honey leads the sale at this stand and that amounts to about 40 per cent of all of our sales since we handled comb and extracted honey. I think this is due to our creamed honey being homogenized and no grains are left in it.



The Cox honey stand on Yellowstone Highway at Shelley, Idaho.

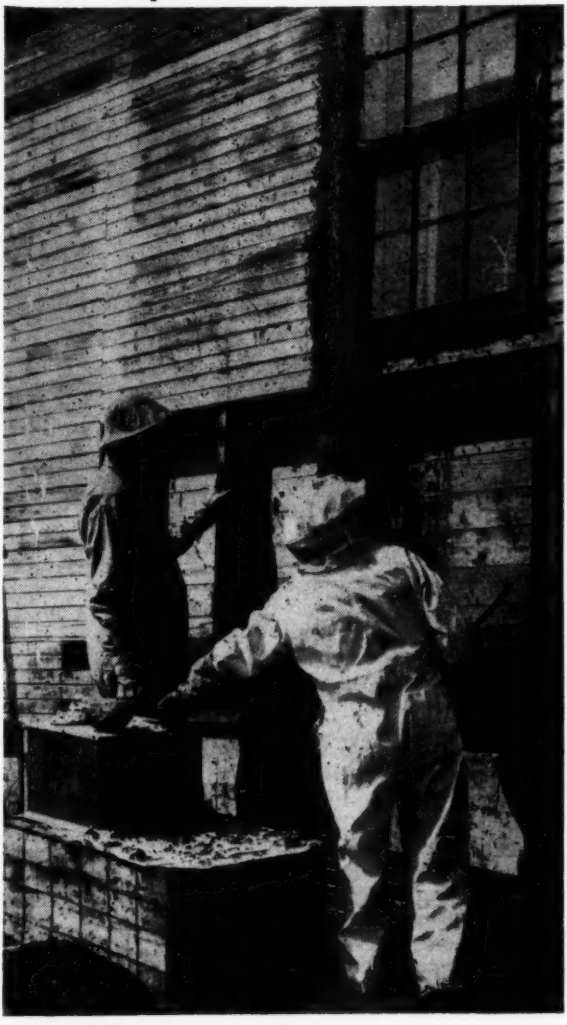
Prepare for National Honey Week

October 25 through 30

Get a supply of promotional literature from the American Honey Institute, Commercial State Bank Building, Madison 3, Wisconsin.

Bee-Gone! But They Don't Wanta!

SO A QUEEN bee and thousands of her loyal swarm remain under the siding of a building occupied by Neff & Clapp, plumbing and heating contractors, on Route 94 just south of Sharon Center, almost midway between Medina and Akron, Ohio. It seems that Queenie got in by way of a knothole seven years ago. The swarm grew. Worse yet, every now and then a customer got stung—by a bee. So a couple of amateur beemen, Chester Duncan and Paul Hinkle, donned protective clothing and started ripping off the siding. They removed a bushel and a half of bees. The picture shows them at work. They removed the honey, but they never did get the queen bee. She kept retreating farther and farther up inside. So the siding was replaced and tightly nailed down. Maybe she will decide to come out—if she can!—Reprinted from the Cleveland Plain Dealer, Cleveland, Ohio.



Cleansing Ants from Your Hives

by HENRY E. PUCHTA, Labadie, Missouri

UP TO A FEW years ago we had serious trouble with ants but now we are able to control that problem with an every-day item which is used in most kitchens in America. That product is Old Dutch Cleanser which is used for cleaning pots and pans and which we have used successfully to control ants.

When we find ants on the inner cover, we sprinkle the Old Dutch Cleanser over the ants, eggs, and their larvae, so the entire mass is completely covered with powder and then we replace the outer cover on the hive. If you care to, you may also sprinkle some powder at the base of the hive and then forget about it for it will act as a repellent to the ants.

When you return to the hive next day or later, the ants will either be dead or vanished. If this cleanser is kept on the inner cover all the time, it will act as a repellent and prevent any ants from troubling your colonies.

A Talk to Beekeepers

M. J. Deyell

Recent Trends in Our Industry

HAVING BEEN rather closely associated with GLEANINGS during the past few decades, it has been suggested that I record a few of the trends or developments that have occurred in our industry during that time. There may be some advantages in having lived long enough to observe and evaluate some of these trends.

The Food Chamber

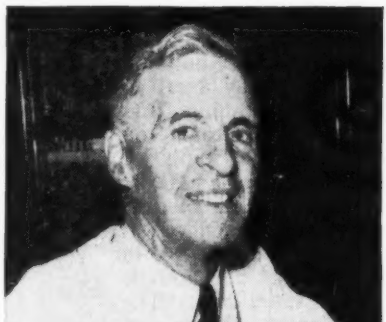
When I took charge of the Root Company apiaries the spring of 1919, bees were wintered in single story brood chambers. This meant feeding a considerable amount of thick sugar syrup in the fall, after the cessation of brood rearing, to help insure an adequate amount of winter stores. At that time all of the colonies wintered out of doors were packed quite heavily.

Some of the colonies were wintered in our bee cellar. We usually had quite a large percentage of dead or weak colonies in the spring. It was necessary to strengthen the weak colonies in the spring with queenless package bees and to use package bees with queens to put into hives in which colonies had died during the winter.

The late George F. Demuth joined our GLEANINGS staff the spring of 1920. He mentioned having adopted the food chamber hive. At that time he operated close to two hundred hives of bees near Peru, Indiana, his old home. It seems that he stumbled on to the food chamber idea accidentally when working with the late Dr. E. F. Phillips at the Bee Culture Laboratory in Washington, D. C. Mr. Demuth had a month off during the year and arranged to take the month of June to work his own bees.

He had a brother in Peru who removed the packing cases from the bees around fruit-bloom time and put a super on each colony to provide comb space for the spring flow. Mr. Demuth usually took a few days off in late October or early November to pack his bees for winter.

One fall he was so busy with his work in Washington that he did not find time to visit his yard late in the fall, so the supers of late summer and fall honey which he usually removed were left on during the winter. Demuth worried a great deal about this situation during the winter months but when he visited his apiaries about fruit-bloom time the following spring, lo and behold, the colonies were boiling over with bees. Right then and there the food chamber idea was born. As a matter of fact, the food chamber had not been named. He first called it the automatic feeder and later on, the food chamber.



Jack Deyell

The second story serves as a food chamber

Trying out Food Chamber

I CAN WELL remember the first time we tried out the food chamber idea in the Root Company apiaries the fall of 1923. We left a well filled shallow super of summer honey on each of 32 colonies of bees. One of the men working for me said that all of the colonies would be dead in the spring.

I replied, "Well, let them die".

There were quite a number of hives in the same yard that did not have food chambers. When we visited the yard the following spring we found the food chamber colonies boiling over with bees and some of the other colonies mediocre in strength, needing food. From that time on we adopted the food chamber idea in all of our apiaries. As already stated we at first used the shallow food chamber. Later on, we changed to the deep food chamber which appears to be preferable for most localities although in areas where there is a heavy fall flow the shallow food chamber can be used to advantage.

For the benefit of younger beekeepers who are just starting in the business it should be said that the use of the food chamber obviates a considerable amount of work in the fall, feeding the bees sugar syrup, also spring feeding, that is, if the food chambers are well filled with honey late in the fall, as they should be. As the honey in the combs of the food chamber is used up, the combs become available for the brood rearing and so in the spring the food chamber is in reality a food chamber and a brood chamber.

Migratory Beekeeping

It was my privilege to be associated with the late George F. Demuth from 1920 to 1934 while he was editor of GLEANINGS. One day he told me the following interesting story which I suggested he write for GLEANINGS but he never did get to it.

Mr. Demuth was an ardent admirer of the late A. I. Root. During the late nineties, he made a trip from Peru, Indiana, to Medina, on his bicycle to pay Mr. Root a visit. After arriving in Medina, he decided to get a hair cut before coming down to the Root Company plant. As he sat in the barber shop awaiting his turn, he saw a man riding by on a bicycle with six supers containing frames with full sheets of foundation, roped around his shoulders and resting on his back. Mr. Demuth naturally inquired who the man was and the barber said, "Oh that is E. R. Root taking some supers to an out apiary."

At that time (about 1886) before the automobile was in use, the Root Company maintained two out-apiaries, each two or three miles from Medina. The supers were usually hauled to and from the apiaries in wagons drawn by horses, but apparently E. R. Root decided to use his bicycle to save a little time.

The automobile came into use in our apiary work around 1912. With the development of good roads, it soon revolutionized out-apiary work.

G. M. Doolittle of New York state was one of the first to adopt the automobile in his out-apiary work, even before 1910. In his book entitled "One Year in the Apiary" he tells about driving to an out apiary quite early in the morning before the bees were flying in order to cut the grass in front of the hives.

During the past few decades, bees have been transported North, South, East and West by truck and the time is doubtless coming when the airplane will be used in transporting bees and equipment to and from out apiaries.

Bees for Pollination

THE VALUE of bees for pollinating farm crops, including fruits, vegetables and legumes has been recognized during the years. However, within the past decade, special emphasis has been placed on the value of bees for pollination. There may be a few orchardists who apparently are not fully aware of the value of honey bees near their orchards to increase fruit crops. In some instances orchardists are fortunate in being near wooded areas where swarms of bees are found in bee trees, also where other pollinating insects are quite plentiful.

A few years ago when this special emphasis on the value of bees for pollination occurred, it was thought by some that the industry might be entering what could be called the pollination era. However, the demand for bees for pollinating farm crops appears to have subsided somewhat during the

past few years, especially throughout the East. Growers of alfalfa in the West insist on having an adequate amount of colonies of bees in or near their alfalfa fields while in bloom, in order to help insure a good seed yield. Some commercial beekeepers make a business of renting bees to those who need pollination service.

Laughing Gas

This gas, Nitrous Oxide, has been used on a rather limited scale in the U. S. for putting colonies of bees to sleep before moving them a short distance. The bees after coming from under the effect of this laughing gas will re-orient themselves to their new location, so it is alleged, whereas, if the bees are moved a short distance without the application of Nitrous Oxide many of the old bees will likely return to their former location. Laughing Gas is also recommended for requeening colonies of bees.

It should be said that the use of Laughing Gas was originated in Europe some years ago so that it cannot be said that the idea is new.

From experiments conducted in this country recently, it would appear that the gas should be used with care in order to obtain satisfactory results. Whether or not it will be used generally in the future remains to be seen.

Hive Loaders

During the years, beekeepers who object to heavy lifting, have devised various contrivances for lifting hives, also for loading and unloading hives of bees on and off trucks.

In areas where migratory beekeeping is practiced on a large scale it seems essential to have hive loaders in order to save on back breaking labor. It would seem that an economical and efficient mechanical means for handling hives satisfactorily will yet be worked out.

Some are now using a mechanical tail gate that can be lowered to ground level to load, then elevated to truck floor level to transfer onto the truck.

H. E. Calfee, Box 344, Niceville, Florida, has found an easy way to load hives. He has a boom that swings in a 360° arc and is powered by a 12 volt electric lift. The lift uses the truck battery supplemented by one additional 6 volt storage battery. The boom may be lifted out of the holder when the truck is traveling. Mr. Calfee said the entire outfit cost him slightly in excess of $300.00.

Anti-biotics for Bee and Brood Disease Control

THIS APPEARS to be a moot question at the present time.

A little over ten years ago when sulfathiazole was tried out, many beekeepers were rather skeptical as to the value of this drug for controlling A.F.B. Some still are. However, time has proven that sulfa will inhibit the progress of A.F.B. and according to late work done by Dr. J. E. Eckert of Davis, California, the disease may be eradicated in a diseased colony by the proper use of this drug.

I am of the opinion, however, that when a colony of bees is found infected with A.F.B., in the advanced stages it is better to destroy the bees and burn, also bury the contents of the hive in a pit, then carefully cover the ashes. At any rate when this is done, one is burning his bridges behind him.

I have had very little experience with European foul brood. As a matter of fact, it is very seldom found in this vicinity, to my knowledge. I have seen it in one of the Ohio counties. Terramycin is now being used to control European foul brood. Fumagillin is being used in the control of Nosema. It now appears that the proper use of anti-biotics may save a great deal of honey, wax and bees, as well as hives and appliances.

American Honey Institute News Notes

by HARRIETT M. GRACE, Director
Commercial State Bank Building, Madison 3, Wisconsin

THE MAN who invented the Packard automobile slogan, "Ask the Man Who Owns One", must have earned for himself a tidy fortune. Here is a model slogan; here we can learn the secrets of real merchandising through the written word.

Any Packard dealer will tell you that Packard sales zoomed as this slogan became popular. Its success was phenomenal, even in the field of advertising where superlatives are commonplace no one could say too much for this magic sentence. It sold cars, Packard cars.

How we would like something like it to sell honey—our honey! Only once in a lifetime is such a slogan written, that couples a flair with words with that personal touch that always appeals. But if we study that famous sentence closely, perhaps we can make that "once" occur in our lifetime.

What is there about "Ask the Man Who Owns One" that caught the public's fancy? Let's number its assets:

1. **It is short.** Any slogan that is worth it ink must be limited to those few words that can be read and digested at a single glance. In advertising of any sort brevity is a virtue; in slogan-writing, it is a must. This one has six words. That's enough. Any more would be cumbersome, awkward, and superfluous. Pare out of your slogans all words that don't earn their berth. And remember—the fewer, the better.

2. **It uses simple language.** Note that every single word is a monosyllable. There's not a tongue twister in the lot. You could not speak English without knowing the meaning of every one of these words, and still they pack power. Such is the beauty of simple language; everyone knows what you mean, and the point you are making drives home.

In a slogan never use a word that has more than two syllables—your slogan will lose force.

3. **It is personal.** "You" is implied at the beginning of the sentence—**you** ask the man who owns one. And your neighbor or friend is brought into the discussion—the fellow you ask who owns one of these cars. With those two associations imprinted in your memory you feel quite chummy with the slogan, and before you know it, with the automobile itself.

Get as personal as you can in a slogan, but be positive that the personal reference is a pleasant one!

4. **It is always good, not dated.** Woe to the advertiser who strings his slogan on a particular season or year. Time passes so quickly, and then so does the slogan's selling performance. You can "Ask the Man Who Owns One" either back when the slogan originated, or today in 1954. And probably up in 1970 you will still be asking.

That's good business. Find a slogan, then stick with it. It will serve you better with each passing year as it w e d g e s its way into the public's memory.

Slogans for honey keep cropping up in the field of work covered by the American Honey Institute. We need slogans to put at our letterhead, slogans for newspapers, slogans for p o s t e r work, slogans for booklets and recipe leaflets, slogans for member beekeepers, slogans, slogans, slogans! !

Want to hear a few of the ones that we use constantly? Here they are. Measure them against the standards we have set up above, and you will see how well they score.

—On our letterhead: Honey the Oldest Sweet.
—On our display poster: Take Home Some Honey and: Don't Forget the Honey.
—Recipe book: If You a Cook of Note Would Be, Use Honey in Your Recipe.
—Recipe leaflet: Honey, a Sweet Gift from Nature.
—Stand-up Card: Honey for Breakfast—Gives Energy for the Day.
—Recipe leaflet: Use Honey Every Day of the Year.
—Recipe leaflet: It's a Honey.
—Recipe leaflet: Make Every Meal a Guest Meal with Honey.
—Recipe l e a f l e t: Start the Day Right with Honey.

How to help yourself

by HENRY A. SCHAEFER, President, American Beekeeping Federation

WHEN President Eisenhauer last fall announced the new proposed farm bill prepared by Secretary of Agriculture Ezra Taft Benson, that part of the bill regarding price support was not recognized as a service to the Bee and Honey Industry. But it was. Like one man, the industry reacted to work for the changing of but one word—permissable—to MANDATORY price support for honey. WHY?

Because under the mandatory price support program with its purchase agreement and loan features the honey market became stabilized for the first time in many, many years. The welfare of the bee and honey industry depends on a stabilized market. Producers are given some assurance of a fair return on their investment so that they can support a research and promotion program. Honey dealers and processors are reasonably sure their competitors will not disrupt the market with distress honey procured at lower market prices. Some dealers use the honey loan as a means of insuring a source of supply of honey for their seasonal needs. The bee supply manufacturers do a more healthy business when the producers' status is healthy. The bee and queen producers also depend on a healthy producer economy. So a stabilized market for the producer is good for all concerned in the industry.

Under PERMISSABLE price support for honey, it was feared the stabilized market would be lost. Under the able direction of Mr. Alan I. Root, Chairman of the Honey Industry Council of America, evidence was gathered and edited showing why mandatory price support was still urgently needed. This evidence was presented in the form of an Industry Statement to the Senate and House Agriculture Committee Hearings on the proposed Farm Bill.

Later other facts or conditions were added by me and presented to the Board of Directors of the American Farm Bureau Federation in soliciting their aid to have honey retained on the mandatory basis. The Farm Bureau was originally against mandatory price support. After hearing the reasons the honey industry advanced for the need for mandatory support for honey, the Farm Bureau Directors voted to support the honey industry in it's request that honey remain under mandatory price support.

These facts and conditions about the bee and honey industry should be brought to the attention of every member of the industry, because when conditions affecting the purse strings adversely are made known, something is generally done about these conditions.

Under modern agricultural practices, which destroys the natural pollination insects, honey bees are the only pollination insects managed by man. Only in restricted areas is it feasible for the beekeeper to collect for the bees' services. In all others, the beekeepers must rely on the price of honey for the services his bees perform to pollinate the neighbor's crops. Beekeeping is about the only agriculture pursuit that shares its benefits with the neighbors!

For the good of general agriculture, our bee population needs to be increased. Price Support is helpful in reducing the decrease in bee population but a more permanent cure for the industry ills is through a strong National organization, such as the American Beekeeping Federation. And still more important is that that organization be adequately supported in a financial way so that it can do more to promote the sale of honey.

NOW, while we have a stabilized market, even with what some call minimum earnings, we better do something for ourselves as we had promised Congress and the Farm Bureau Federation we would if they would help us retain price support for honey.

May I suggest that every one reading this, if not already a member of an industry organization, join one without delay. Beekeepers, join your County, State, and National organizations. Only through organization can our problems be resolved, and we have to do the resolving ourselves. If we

depend on "George to do it", we will remain just where we have been all these past years, waiting for "George" to dig up scientific facts, waiting for "George" to organize us for an industry-wide honey promotion program.

The American Beekeeping Federation's immediate honey sales promotion is the Fereration's Marketing Committee's October honey month sales activity using the excellent material at retail level developed by the American Honey Institute. Plans are also on the drawing board to promote honey use by commercial bakeries on a larger scale than now being used.

A long-range program is in the making for honey research. Only through research can we get scientific proof that honey IS GOOD FOR THE HEALTH. The Pure Food Department of U.S.D.A. will not allow the industry to say that honey is good for this or for that. We NEED RESEARCH ON HONEY to be able to do some real advertising. We need honey on the table as a FOOD, not as a luxury. Only then will used beekeeping equipment have a greater value than it now has.

Research requires funds and management. Funds must come from the industry. Mr. Beekeeper, is it worth your membership in the Federation to protect your investment in bees? To increase the use of honey? You should belong to the Federation. By joining you will increase favorable p u b l i c opinion among beekeepers, then more and more will join. In time the Federation's program will become a reality, not just a plan. Then the members of your family will want to continue in the bee industry. The cost is small. $1.00 up to 50 colonies, 50 to 100, $2.50, over 100 colonies, four cents per colony.

A Simple Honey Strainer

by J. R. CRAWFORD, McArthur, Victoria, Aus.

THE SMALL beekeeper does not perhaps consider that a big outlay on a honey strainer is justified.

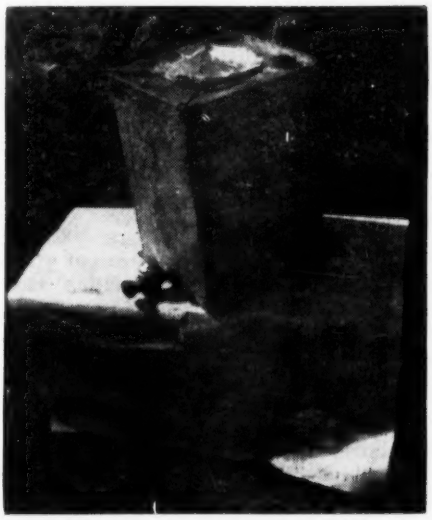
The accompanying photograph illustrates a handy strainer with a capacity of one 60-pound can.

This outfit can be used under the extractor if a heating coil is fitted, or at any other time when honey is to be heated for clarification.

The strainer consists of a 60-pound can fitted with a tap, preferably a large one. The tap in this case is used with a nine-inch bend extension with a coupling. By this means the honey may be directed into the vessel with no splash or drip.

The strainer is a cheesecloth or calico bag made almost as large as the inside of the can and s u s p e n d e d through an eight inch hole in the top.

The means of suspension are four hooks fitted in the corners and reaching the edge of the hole and turned up there to hold the bag. If the honey is reasonably clean, the bag will strain several cans, the upturned hooks making the removal of the bag easy.



The hooks can be clearly seen at the top.

Most important in quick work is to have the honey as near to 140°F. as possible.

Just News

The **Bergen Co. (N.J.) Beekeepers** will hold their annual picnic on Sunday, September 19, at 10:30 A.M. at the summer place of Mr. and Mrs. Fred Clauss in Upper Saddle River. The main speaker will be the popular Milton Stricker, of Annandale, who contributes many authoritative articles to the leading bee journals.

The results of two summers observation of a scale hive by Julius Henn and a survey of the possible nectar sources in our area by George Haage will be presented in chart form. This valuable work should guide our manipulations in future seasons. Tickets will be available from our President, Hans Katlun, of Bergenfield. Let's make this a bang-up get-together for our last outdoor meeting of the season. —William Haupt, Publicity.

The **Westchester County Beekeepers' Association** will hold its next meeting Sunday, September 26th, at 2:30 P.M., at the home of Mr. and Mrs. Fred Conrad, Woodcliff Lake, N. J. This will be our yearly get-together and we know all those that come will have a good time.—Carlton E. Slater, Pub.

The **Wisconsin Beekeepers' Association** will hold its annual winter meeting during National Honey Week, October 28 and 29, at the Retlaw Hotel in Fond du Lac.

The Executive Committee of the **Arkansas Beekeepers' Association** has set the date for the State Convention in Harrison, Ark., as October 11, 1954, in the Legion Hut. Registration will begin at 8 A. M. and the meeting will open at 9 A.M. Several prizes will be given beginning at the opening of the meeting and during the day, followed by the Grand Prize after the banquet. Several prominent speakers will be on the program during the day. Everyone is urged to attend.—Mrs. Gladys McKay, Sec.

Mechanical Pollinator. — Agricultural engineers at Kansas State College are reported to be constructing a machine that will mechanically trip and pollinate alfalfa blossoms. Pollen is released when flowers go through tripping rollers, and then is sucked up and blown to the front where it falls on other flowers just before they go through the rollers. A description and photo of this machine in operation is shown on page 50 of the August issue of the FARM JOURNAL.

Stings Betray Thieves. — Five persons with swollen hands and faces were charged with stealing in Shelby, N. C. Sheriff Haywood Allen said they were arrested for taking honey from their neighbor's hives. The neighbors were not at home, he said, but the bees were.

Bees Leave; Ants Can Take It—They Stay. — Bill McMahan of Enid, Oklahoma, didn't mind so much when a group of honey bees moved in with him but he objected when an army of ants decided to take up residence, too. He spread DDT and motor oil along the wall where the bees had established their hive to discourage the ants. He discouraged the bees instead. They departed, and the ants remained.

New Bee Magazine. — The "Beekeeping News", a bee readers' digest of news, information, and ideas has recently come to our attention. This 20-page monthly journal reviews articles from bee journals throughout the world. A one year subscription is 3/6 (post free) from the Editor, I. G. Rankin, 39 Bramley Road, London W. 10, England.

Milk and Honey Beauty Treatment. — The **British Bee Journal** reports that Marlene Dietrich keeps her fresh complexion and young appearance with the aid of a milk and honey face pack. Here is her formula: Stir a tablespoonful of liquid honey into three tablespoonsful of milk. Smooth the mixture over the face and neck and leave it on an hour. Wash it off with warm water and there you have it.

Goats, Rabbits and Bees Arrive from U. S. — Dexter Lutz, former Presbyterian missionary now serving with the

United Nations Korean Civil Assistance Command, was on hand in Pusan with the committee to receive the shipment of goats, rabbits, and bees sent by air from the United States by the Heifer Project. Church World Service is "loaning" the rabbits and goats to deserving farmers, who earn the right to keep them by returning "offspring in the same health, age, and quality as the animals received" for distribution to still other deserving farmers. More than 200,000 bees in 200 hives are also being distributed.—The Christian Century Magazine.

Weather and Honey Bees. — Dr. A. K. Wafa, Apiculturist at the University of Cairo, Egypt, has just published the results of his studies of weather and honey bees in the Bulletin of the Society Fouad Ier Entomology. The titles are: "Analysis of the Influence of Single Weather Factors on Flighting and on Changes in Weight of Scale-hives of Honey Bees at Rothamsted" and "Seasonal Variation, the Distribution of the Changes in Honey Bee Colony Weight and the Metabolic Rate during a Period of Inactivity".

Bee Scientist Dies. — Dr. S. W. Bilsing, Professor Emeritus, formerly Head, Department of Entomology, and teacher of beekeeping for about 20 years in Texas A and M College, died July 23. He was born December 8, 1885 and was reared on a farm near Crestline, Ohio.

He was best known for his research on the biology and control of pecan insects. Both as a teacher and administrative head of the Entomology Department, his service has covered a period of almost 40 years at Texas A and M College. Some of the students who have received training in his beekeeping classes are S. E. McGregor, Otto Mackensen, A. H. Alex, Neal Randolph, Hugh Graham, Cameron Siddall, O. D. Deputy, and Claud Burgin.

Bring Your Inventions to Orlando. — There are a thousand and one beekeeping gadgets or devices many of which are valuable time savers for beekeepers other than the owner or inventor. The writer has visited beekeepers in most of the states east of the Mississippi and most of them have some tools or handy devices they have invented that would be helpful to others.

A special exhibit room is being arranged for your invention at the Orange Court Hotel, Orlando, Florida, when the Southern Conference meets there December 1 and 2 for their annual convention. Bring any handy tools or devices you have invented or found that are not generally used, and help a brother beekeeper. You, too, may find there something that would be extremely helpful in your operations. Nothing larger than you can carry by hand. Label it with your name and its use.

The spacy Orange Court Hotel several blocks from crowded down town will be convention headquarters. This beautiful hotel seems almost in the country with free parking space on all sides. Reasonable rates both here and at the hundreds of tourists courts nearby. Beautiful flower gardens and parks of this great southern city of hospitality will delight your family. Make this your vacation trip. The **Florida State Beekeepers' Association** will be your host and they are planning great things for you. See you in Orlando, December 1 and 2.—A. D. Hiett.

"Installing Your Package Bees" is a new Service leaflet prepared by W. L. Coggshall, Extension Apiarist at Cornell University, Ithaca, N. Y. Eleven steps in handling bees from arrival through installation are clearly illustrated.

The Annual Convention of the **American Beekeeping Federation** will be held the last week in January, in the Sherman Hotel, Chicago, Ill.

The **New Jersey Beekeepers' Association** will meet October 16 at Hotel Roger Smith in New Brunswick. A honey cooking contest will be featured. A banquet will be held at 6:30 p.m.

Selling Tips. — "How to Sell Honey", a 32-page booklet giving information on grading, labeling, and selling honey, is available at no cost. If interested, send your request to Gleanings.

Buy and Sell

Only responsible advertisers and honest advertisements will be admitted to these columns. References required from new advertisers not known to us. Rate: 15c per counted word, each insertion. Each initial, each word in names and addresses, the shortest word such as "a" and the longest word possible for the advertiser to use, as well as any number (regardless of how many figures in it), count as one word. Copy should be in by the 10th of the month preceeding publication.

HONEY FOR SALE

WE BUY AND SELL all varieties of honey. Any quantity. Write us for best prices obtainable. The Hubbard Apiaries, Onsted, Michigan.

IOWA honey, one can or truck loads. Russell D. Smalley, Beaver, Iowa.

CLOVER extracted honey in sixties. Abram Brubaker, Lancaster, Pa., Rt. 2.

Michigan's finest raspberry, basswood, clover comb honey, in 4 x 5 window cartoned sections. Extra Fancy, $8.00; Fancy, $7.00; No. 1, $6.00; No. 2, $5.00 case. E. Z. Quick Way B Farms, Boyne Falls, Mich.

CLOVER COMB HONEY FOR SALE—Write for prices. C. W. Schrader, Waterville, N. Y.

HONEY FOR SALE—Orange, sage, clover, sage-buckwheat; all types of bakery honey and mixed flowers. Wholesale only. One can or a carload. American Honey Company, Colton, Calif.

MICHIGAN'S FINEST WHITE CLOVER HONEY. Thoroughly ripened. New sixties. No disease. Sample, twenty cents. You will be pleased. JOHN McCOLL, TECUMSEH, MICHIGAN.

COMB HONEY for sale. Gordon Pratt, Munnsville, N. Y., R. D. 2.

HONEY AND WAX WANTED

BEEKEEPERS TAKE NOTICE—We can not guarantee honey buyers' financial responsibility, and advise all beekeepers to sell for cash only or on C.O.D. terms except where the buyer has thoroughly established his credit with the seller.

CASH for your comb honey and all types extracted. Send sample and best price. Buckeye Honey Co., 3930 No. High St., Columbus 14, Ohio.

CASH for Beeswax. Write as to quantity and we will quote price. Muench-Kreuzer Candle Co., Inc., Syracuse, N. Y.

HONEY WANTED — All grades and varieties. Highest cash prices paid. Mail samples. State quantity. HAMILTON & COMPANY, 2613 South Yates Ave., Los Angeles 22, California.

WRITE FOR shipping tags and quotations on rendered beeswax. We buy from one pound up and if you have over 25 pounds let us work it into foundation for you at a 25 per cent saving. Walter T. Kelley Co., Clarkson, Kentucky.

HONEY WANTED for cash. All grades. Good used cans for sale or trade for honey. John Tideswell, 2711 North 63 St., Omaha, Nebraska.

CASH FOR YOUR HONEY—Light extracted or comb. Regular trade send sample. W. R. Moomaw, Stone Creek, O.

WANTED — White extracted or comb honey. Send sample. Millersport Honey Co., Millersport, Ohio.

HONEY WANTED, all grades in 60's. Mail samples, advise quantity, best price. A. I. Root Company of Syracuse, 1112-14 E. Erie Blvd., Syracuse, N. Y.

WANTED — Honey, all grades. Quote prices and send sample. Write Stoller Honey Farms, Latty, Ohio.

WANTED—Light amber-clover and fall-flowers honey. Cloverdale Honey Co., Fredonia, N. Y.

BEST CASH DEAL for your honey (any grade) and beeswax. Alexander Company, 819 Reynolds Road, Toledo, Ohio.

WANTED—white and amber extracted honey, car loads or less. Write, stating best price. Honeymoon Products Co., 39 E. Henry St., River Rouge, Mich.

HONEY WANTED: The Finger Lakes Honey Producers' Cooperative, of Groton, New York, has an excellent market for all grades of honey and will accept all types and quantities on a membership basis.

FOR SALE

WRITE FOR CATALOG — Quality Bee supplies at factory prices. Prompt shipment. Satisfaction guaranteed. The Hubbard Apiaries, Manufacturers of Beekeepers' Supplies and Comb Foundation. Onsted, Michigan.

THE BIGGEST BEE SUPPLY Catalog published (64 pages) free for the asking. Listing many items not found in other Catalogs. No agents—buy direct and save 20%. WALTER T. KELLEY CO., CLARKSON, KENTUCKY.

FOR SALE — New heart cypress 10-frame bottom boards. K.D., 10 or more, $1.00 each; 50 or more, 90 cents each; 100 or more, 85 cents each. One nailed up sample postpaid, $1.25. Fred L. Poole, Elizabethtown, Rt. 2, Box 67, No. Car.

QUEENBEE PAINTING OUTFITS, $1.50 postpaid. Southwick Apiaries. Waban, Massachusetts.

ELECTRO Filling Machines, users and distributors. Write Stoller Honey Farms, Latty, Ohio.

NOW AVAILABLE, Fumigil for control of Nosema disease in bees. Write for prices and circular by Abbott's Laboratories. PRAIRIE VIEW HONEY CO., 12303 12th Street, Detroit 6, Michigan.

FOR SALE — Several thousand 3-hole queen cages, also other sizes, made to order. Lloyd E. Allen, Tipton, Michigan.

ROSEDALE UNCAPPING PLANES; NOW DUTY FREE—Speedy uncapping—easy to handle—adjustable depth of cut. Satisfactory performance fully guaranteed for one year. Rosedale Co., 509 Rupertsland Ave., Winnipeg, Canada.

BEES AND QUEENS FOR SALE

We use all possible care in accepting advertisements but we cannot be held responsible in case disease occurs among bees sold or if dissatisfaction occurs. We suggest that prospective buyers ask for a certificate of inspection as a matter of precaution.

CAUCASIANS. 2-lb. pkg., $3.00; 3-lb. pkg., $4.00. Untested queens, $1.00 each; 100, $75.00. Lewis & Tillery Bee Co., Greenville, Ala.

TWENTY-ONE YEARS OF BREEDING. Jersey queens for bumper crops. $1.00 each. Milton Stricker, R.D. 1, Annandale, N. J.

THREE-BANDED Italian queens and Dadants 4-way Starline hybrids. Select queens, 1 to 25, $1.00; 25 to 50, 90c; 50 up, 85c each. For Starline Hybrids, add 25c to each queen. These queens are bred for quality not quantity. Alamance Bee Company, Graham, N. C., Phone 4703.

NORTHERN ITALIAN QUEENS — for production, $1.00 each; 10 up, 90c. Shirl Baker, Rodney, Michigan.

GOLDEN ITALIAN queens, best of quality, real gentle. 1 to 25, $1.00; 25 up, 90 cents each. These queens are bred for honey production. Carolina Bee Farm, Graham, N. Carolina.

CAUCASIAN QUEENS, real honey gatherers, and very gentle. 1 to 25, $1.00; 25 to 50, 90c; 50 up, 85c each. Black River Apiaries, Currie, N. C.

FOR SALE — 13 strong colonies, double brood chambers, supers, factory made. W. D. Hawkins, Walton, N. Y.

FOR SALE—80 colonies inspected Italian bees with or without honey. Reasonable. Karl Rude, Mexico, N. Y.

FOR SALE — 425 10-frame colonies of bees, approximately 5 stories high, without honey crop, $11.00 each. Subject to inspection by purchaser. Wm. Kruse, Godfrey, Illinois.

500 3-story colonies bees mostly 10-frame, 50 or more, same price $9.00 each, cash. Buy and get a crop this season. My rights to locations included. No disease. H. Peterman, 551 No. Windsor Ave., Stockton, Calif.

SEEDS

HONEY PLANTS our specialty. Catalog on request. Pellett Gardens, Atlantic, Iowa.

MISCELLANEOUS

HAVE FOR SALE and WANT TO BUY used extractors of all kinds. John Layman, 702 West 6th Street, Bloomington, Indiana.

Bargains in new or used honey cans or Root Supplies for cash or honey. Buckeye Honey Company, 3930 N. High St., Columbus 14, Ohio.

HONEY WANTED
Carloads and less than carloads. Mail sample and best prices in all grades.
C. W. AEPPLER COMPANY
Oconomowoc, Wisconsin

QUALITY BRED ITALIAN QUEENS
March 10 to June 1 $1.00 each
June 1 to Nov. 1 .50 each
All queens shipped Air Mail and guaranteed to please.
Walter D. Leverette Apiaries
Fort Pierce, Box 364, Florida

Italian Queens
EUGENE WALKER
Rt. 2, Box 207
Live Oak, California

GIRARDEAU APIARIES
Tifton, Georgia
Shippers of
ITALIAN
Package Bees and Queens

PACKAGE BEES & QUEENS
"Italians"
Quality Does Not Cost—It Pays
THE WILBANKS APIARIES
Claxton, Georgia

HONEY LABELS
Improved designs, embodying color, balance, simplicity, and distinction. Please send for free samples & prices.
C. W. AEPPLER COMPANY
Oconomowoc, Wisconsin

QUEENS
ITALIANS

Due to the exceptionally hot dry weather we will not be able to supply any Caucasian queens this Fall. Can supply Italians promptly.

— PRICES —

In lots of	
1 - 24	$ .75
25 - 99	.70
100-499	.65

Queens Postpaid—Airmailed or Clipped—No extra cost.

The Stover Apiaries

Mayhew, Miss.

THE TOXICITY OF THE NEWER PESTICIDES TO HONEY BEES

(Continued from page 531)

on cotton when several hundred acres of cotton in bloom were treated in the same general area.

None of the chemicals here reported had any repellency for the bees, although in some instances the bees fed more slowly from the pipettes than at other times. Such differences could have been due to variation in the degree of hunger among the different lots of bees.

WANTED—To buy bee business in good locality. R. L. Turner, 1020 N. Broadway, Wichita, Kansas.

WANTED—Good used filter press complete with pump. Describe capacity and condition and give best price. R. W. Barnes and Sons, Oakland, Nebraska.

WANTED — Beekeeping outfit in the State of Florida, in or adjacent to citrus locations. Box 954, Gleanings, Medina, O.

Ask God to help you pray. Tell your friends the inspiration and joy which this brings you, and ask each of them to tell their friends to pray for and help bring about peace, prosperity, happiness, christian fellowship, and a better day for everybody everywhere. Earl F. Case, Rochester, N. Y.

MAGAZINES

Know interesting facts concerning the bees of India through the INDIAN BEE JOURNAL, published in English by the Bhupen Apiaires (Himalayas), Ramgarrh Dist. Naini Tal, U. P. India, or available through them. Subs. Rs9/ or 15 shillings or $2.25 yearly. Sample copy post free for Rs⅛/, or s2/6, or 40 cents (International Money Order). Payment in mint postage stamps of your country accepted.

ARCHIVE of BEE SCIENCE (Archive fur Bienenkunde), oldest scientific, independent bee journal in the world. Select feature material gives lasting theoretical and practical knowledge. Sample copies available. Two large 1953 editions for the low price of DM 5.50. Biene-Verlag (Bee Publishers), Lindau (B), Postcheck Karlsruhe 5581, Germany.

BEE WORLD, the international journal of the Bee Research Association, published monthly, contains the latest research reports on bees and beekeeping. With Apicultural Abstracts it costs $3.00 per annum. Apicultural Abstracts only $1.75 per annum, from the Hon. Subscription Secretary, Bee Research Association, 10 Brunnett Wood Lane, ASHTEAD, Surrey, England.

Read the South African Bee Journal. Published every two months. Subscription 7/6 per year to the Treasurer, P. O. Box 3306, Cape Town, South Africa.

DO YOU FIND it difficult to secure information about sheep and sheep ranching methods The SHEEP AND GOAT RAISER reaches more sheepmen with more information on range sheep than any other magazine published. Subscription $1.00. Hotel Cactus, San Angelo, Texas.

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COSTLY DROUGHT GETTING WORSE

(Continued from page 542)

dryness, and hot winds severely damaged crops in all areas. Corn drying up; much of it while it was tasseling out. Hay and seed prospects dim. Pasture conditions 37 per cent of normal.

Kansas—No beneficial rain since early June in much of south and west. Hot, dry weather detrimental to all crops.

Nebraska—Rain and cooler weather badly needed. Pastures and ranges becoming very dry.

Minnesota—Topsoil moisture getting short but subsoil mostly adequate.

Colorado—Many fields abandoned in east. Winter wheat much below average.

Texas—Range and pastures dry in all areas. In central and east most sorghums and corn burning. Only few isolated showers in east and extreme west.

Oklahoma—Continued dry and extremely hot weather caused further decline of crops and pastures, with situation now critical. Pastures burned.

New Mexico—Beneficial rainfall confined to small higher elevation area. Most of state still dry. Most dryland row crops poor.

Idaho—Except for damage by thunder and hail storms crops generally good.

California, Oregon and Washington—Crop conditions good.

Maine—Moisture plentiful in north; **potato crop hindered by wet soil.**

New Jersey—Some good showers but more badly needed. Pastures dried up.

Maryland—Moisture adequate in most areas.

Virginia—Good rains in time to save many crops. Pastures beginning to green but still short.

Florida—Citrus groves very good. Rain moderate to heavy in southern half; light to moderate over most of north. Pastures, grasses and cover crops growing well on peninsula. John De Muth reports a good orange crop throughout most of Florida.

Requeen . . .
this fall for strong colonies of vigorous bees next spring. We have both our regular Italian and 4-way Island Hybrid stock. Island Hybrids are produced and mated in yards suited to proper cross with drones of other Island Hybrid lines, results 4-way Hybrids.

Prices:	4-way Island Hybrid	Regular stock
1 to 25	$1.15 ea.	90c ea.
26 to 99	1.05 ea.	80c ea.
100 or more	1.00 ea.	75c ea.

"They Produce"

Rossman Apiaries
P. O. Box 133 Moultrie, Ga.

Booking orders now. Over 30 years a shipper. Send for Free Circulars.

BLUE BONNET APIARIES
Weslaco, Texas

JOHN DAVIS QUEENS
We ship until November 1 and fall is the right time to requeen. Order now and be sure. $1.00 each, any number.

LITTLE'S APIARIES
Shelbyville, Box 122, Tenn.

J. E. WING & SONS
41 Years Continuous Service
Italian Package Bees and Queens
Our Specialty
Knights Landing, Calif.

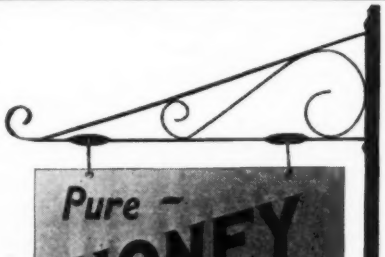
BETTER BRED QUEENS **THREE BANDED ITALIANS**
Be sure and requeen with our BETTER BRED stock and insure your crop for next year. **65c each Airmail.**
CALVERT APIARIES **Calvert, Alabama**

At last a real neat finished attractive sign that you can be proud to display. Its nice appearance is in keeping with Nature's Finest Sweet. It actually dresses up your place.

It hangs from a Wrought Iron Bracket that is fastened in place with two leg screws to a wall or post. The sign has large letters and can be read from either side. Hanging hooks furnished with brackets. Brass eyelets in sign holes for hanging. Color — Yellow, Black, Silver. Not mailable to first class post offices.

Sign size — 28 inches wide by 24 inches high. Net weight 7¼ pounds, shipping weight 10 pounds, price $5.25

Bracket over-all length 32½ inches. Net weight 4 pounds, shipping weight 6 pounds, price, $4.80



A. G. Woodman Co.
Grand Rapids 4, Michigan

Gentlemen: August 18, 1954
In June at the Lorain County Beekeepers Field Day, my wife won one of your large signs in a registering attendance drawing.
Sure glad to have one as it dressed my stand and has increased the Auto Trade almost a third more. I wish to thank you for your kindness in donating such an attractive and large item which will do me a lot of good. Probably would have never realized how nice it is, but it was just what I needed. I wish to place etc. ..... H. E. Keister, Elyria, Ohio

TOO LATE TO CLASIFY

FOR SALE—75 cases white clover comb honey. One mile west Fremont, Ohio, State Rt. 6, ½ mile south Tucker Road. Roy Auxter, Rt. 2, Fremont, Ohio.

Fifty-year-old beekeeper wants work, prefer Northwest. Bok 210, Gleanings in Bee Culture, Medina, Ohio.

WILL BUY two carloads fancy white honey. Send sample and quote. Maxwell's, Berryville, Va.

HONEY, one car white clover honey. LOSE BROTHERS, Inc., 206 E. Jefferson St., Louisville, Ky.

STRAINING HONEY

(Continued from page 528)

The principle involved is rather simple. The granules of honey, particles of wax or other refuse are trapped and suspended in a layer of gravel which is placed above a screen of suitable mesh for straining. Overflowing is eliminated since the honey is forced through the strainer by the honey pump in a closed circuit. It is, however, necessary to employ a good sump, a means of warming the honey, and a continuous flow. Continuous flow is best obtained by the use of a series of pulleys and a variable speed motor which can be adjusted to suit the extracting speed.

The choice of the method to use for suitable straining will depend upon the size of operation and the facilities available.

High Quality Italian Queens
By Airmail
75c each. 10 or more, 65c each.
CARLUS T. HARPER
New Brockton, Ala.

LET'S TALK ABOUT HONEY PLANTS

(Continued from page 548)

plant in Missouri, southern Indiana, and southern Illinois, but since the advent of weed sprays in the corn fields, it is no longer considered an important honey plant in most sections.

Gilbert Perigo, Indiana bee inspector, sent me a fine sample of this honey stored in 1953. It has a delightful flavor and is white in color, but cloudy, a characteristic feature.

Perigo told me that he has made tons of honey from blue vine and considers it a top quality honey. It grows very rapidly in hot, dry weather, so rapidly that one of its names is "foot-a-night". As 1954 is another dry year, beekeepers in blue vine territory should be on the lookout for blue vine locations.

THE ROLE OF THE DEALER

(Continued from page 525)

of credit, by which banking instruments almost all export business in honey is done. Even bankers in interior cities are unacquainted with them, so when all these factors are considered as well as the fact that the exporter needs to be at the port to expedite shipment, it shows conclusively the dealer's indispensable part in this function of growing importance.

Producer and Dealer Problems

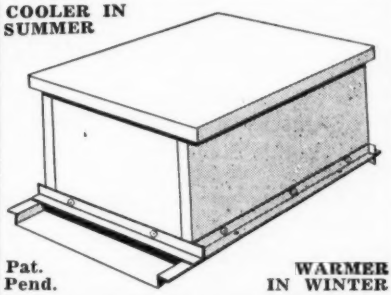
WERE SPACE to permit, we might go into the problems between producer and dealer. There are not many. There is one principal one, and that is the matter of accurate samples. We buy on samples and sell on samples. When we get inaccurate samples, we have trouble—sometimes serious trouble. Almost all of it could be avoided by following these simple rules:

1. Send samples of each grade. Don't let one sample represent a lot in which there is considerable variation.
2. Grade honey carefully and segregate and mark variations on extracting so they will not be overlooked at time of selling.
3. Send samples to dealers just as the honey appears in the container. Neither liquefy nor strain again samples sent to dealers.

If this seems to be an article defending the honey dealer, it was intended to be. His essential function does not seem to be well understood. We sometimes feel as though producers think we wear horns. We do not. My acquaintance with the honey dealers of the United States, as well as the packers, has shown them to be a group of men of fine character, devoted to being of service to the honey industry. Long since, they have subscribed to the proposition that what is best for the industry is best for them.

Package Bees & Queens
Quality & Service
C. F. KOEHNEN & SONS
Glenn, California

COOLER IN SUMMER



Pat. Pend.

WARMER IN WINTER

UNI-TEMP ALUMINUM HIVE
Dealer Inquiries Invited.
The A. H. HALE CO.
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ITALIAN QUEENS
$1.00 each — Air Mail
Package bees at May prices
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Queens Queens
ITALIAN
Nice large queens 55c each
Mitchell's Apiaries
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ITALIAN
Package Bees and Queens
Jackson Apiaries
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FLOWERS' QUALITY QUEENS
Breed from hives that made 300 pounds of honey, gentle and prolific. All queens mated and laying guaranteed. Prompt shipment.
1 to 1000, prepaid airmail, 50c each
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JESUP, GEORGIA

U. S. Savings Bonds come in all sizes . . . . .and grow bigger every year.

York's Quality Bred Queens

Two Strains

Queens Bred Up to a Quality—Not Down to a Price

York's Italians		Dadant's Starlines	
1-24	$1.00	1-24	$1.40
25-99	.85	25-99	1.30
100-up	.75	100-up	1.20

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The Preference of Leading Honey Producers

York Bee Company Jesup, Georgia

(The Universal Apiaries)

ITALIAN "GULF BREEZE" QUEENS

Your 1955 crop will depend on your fall preparations. Among other things, dependable queens is a MUST. Requeen with "GULF BREEZE" and be sure you are right.

Prices: 1-24, 80c each 25 up, 75c each AIRMAILED.

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CAUCASIAN

QUEENS	QUEENS
1 - 24	$1.00
25 - 49	.90
50 - up	.80

Howard Weaver

Navasota, Texas

QUEENS

Italian or Caucasian

Health certificate and live arrival guaranteed with each shipment. Send your requirement now.

— Price —

1-24	75c
25-50	65c
100 up	60c

FARRIS HOMAN

Shannon, Miss.

Are you ready for
National Honey Week?
October 25-30 is the date.

FIVE DEEP BROOD FRAME HIVE

(Continued from page 543)

When colonies are to be requeened the five-frame hive can be transported to the apiary. Take two frames of bees with the queen on the comb and place them inside of a standard hive but near the outside of the broodnest. In any case, where requeening is to be carried on the queen must be killed in the colony before introducing the new queen. This method is practical and a very safe way of introducing queens.

The beekeeper should keep one spare queen in these five-frame hives for every 10 normal colonies operated.

A small colony of bees is much easier to handle than a regular colony. This gives the beginner an excellent opportunity to work with a colony and become accustomed to handling bees as the colony increases in strength. It is much easier for the beginner to find the queen in a small colony than in a normal strong colony.

"The Australian Bee Journal"
Published by the Victorian Apiarists' Association at the beginning of each month.
Subscription 10/-per annum plus 2/6 postage to oversea countries.
Address 112 Whitehorse Rd. Ringwood, Victoria, Australia

JENSEN says:
Year in and year out other factors being equal, the character of the queens in your hives depends on the size of your honey crop.
The quality of breeding stock which takes years to develop, plus the methods of reproduction employed in the rearing of daughter queens, after all, writes the final chapter in any requeening program. Recollection of quality remains long after price is forgotten.
Our own "Magnolia State" Italians are backed by 39 years of commercial queen-rearing experience, and increased yearly sales attest to their popularity and satisfaction.
Dadant's "Starline" Hybrid stock has in addition, scientific breeding research and experimentation plus technical genetical application, by and under eminent scientists trained in this highly specialized work, assuring the highest degree of control of hereditary characteristics of the honey bee.
Whichever strain you elect to use, you won't go wrong with

Reg. U.S. Pat. Off.

JENSEN REARED QUEENS

"Magnolia State" Italian Queens, 1-24, $1.10, 25-99, $1.05, 100 up $1.00 each.
"Starline" 4-way Hybrids, add 25 cents to each.
All Hybrids Clipped and Marked — Italians on request only.
Free. Postpaid. Airmail when expedient.

JENSEN'S APIARIES Macon, Miss. **U. S. A.**

QUEENS — TOP QUALITY

DO NOT PUT OFF replacing those WORN-OUT queens. A change WILL Pay Off . . . . . with GARON'S THREE-BANDED ITALIANS — or, with DADANT'S STARLINE 4-WAY HYBRIDS. NONE BETTER.

	GARON'S THREE BANDED ITALIANS	DADANT'S 4-WAY STARLINE HYBRIDS
1-24	80c	$1.25
25-99	75c	1.20
100-up	70c	1.10

Reg. U. S. Pat. Off.

Queens clipped and/or marked, also Air Mailed upon request at no extra cost.

GARON BEE COMPANY **Donaldsonville, La.**

BRIGHT THREE-BANDED ITALIAN QUEENS

Our Strain is from early imported Italians. Their behavior is more according to pattern than most other races. They are usually gentle, hardy, good workers, and not inclined to swarm. Use our queens and you will be in line for all the honey crops and have nice bees to work with.

PRICES, balance of season:

1 to 50	80c each
50 or more	75c each

TAYLOR APIARIES
Box 249 Luverne, Ala.

REQUEEN NOW WITH HOLLOPETER'S ITALIAN

Queens, are reared in the mountains of the North, from stock full of vim, vigor, and vitality. Queens reared by the veteran queen breeder, J. B. Hollopeter with 44 years' experience.

— Prices —

1-9	$1.00 each
10-24	.90 "
25-49	.80 "
50-99	.75 "
100-up	.70 "

White Pine Bee Farms
Rockton, Pa.

OLDEST BEE JOURNAL IN THE ENGLISH LANGUAGE

Keep up on markets, practices, scientific data, regulations and plant possibilities.
1 year, $2.00, U. S. and Canada
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The New Zealand Beekeeper
The Quarterly Magazine of the National Beekeepers' Association of New Zealand. Better Beekeeping — Better Marketing. Subscription, 8 shillings per year, payable to
THE GENERAL SECRETARY
Box 19 Foxton, New Zealand

U. S. Savings Bonds come in all sizes . . . . .
and grow bigger every year.

Good Queens. Three Banded Italians only. Tops in production and gentleness. The choice of leading beekeepers for more than 30 years.

85c each 10 ..... 80c each 25 up ..... 75c each

Airmail, postpaid. No disease.

Requeen now through October for maximum production and less swarming next year.

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A. G. Woodman Co. (Send for Catalog - 350 Listings) **Grand Rapids 4, Mich.**

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